



PREPARATION OF AUDIO MATERIAL FOR VINYL RECORDS manufactured by MISTER DISCO

1. Vinyl record technical specification.

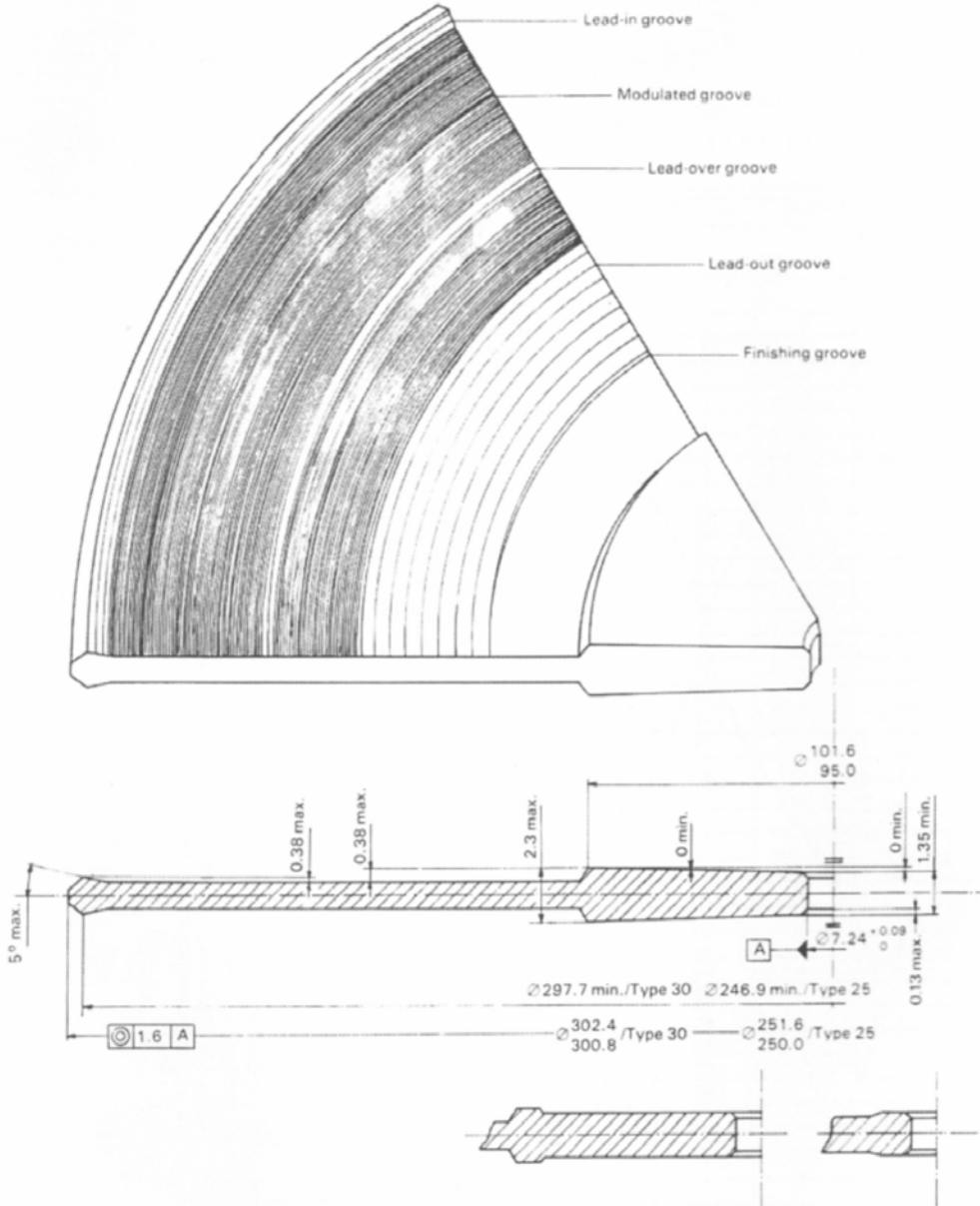
a) gramophone record is a form of analogue audio carrier with continuous spirally pressed groove. Because of the way its recorded and read, usually it is also called an analogue record, whereas because of the material used for production – it's called vinyl record.

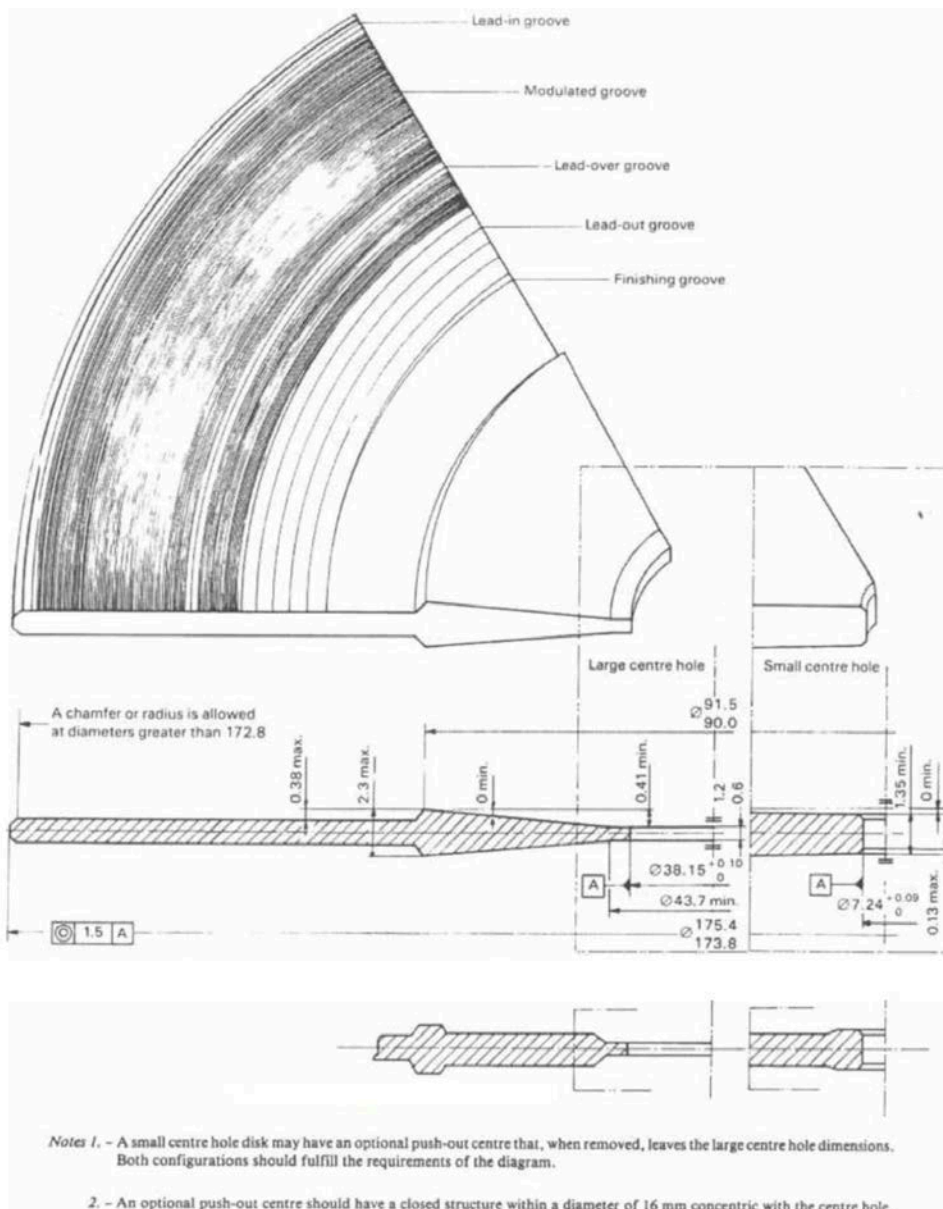
As standard audio material is recorded on the both sides of the records in the two channels system (stereo). Since the end of XIX century vinyl record was the basic carrier of distributing music albums. In last couple of years the popularity of vinyl record has grown tremendously, not only amongst the audiophile customers.

b) MISTER DISCO manufacture discs made of polychloride vinyl (PVC) – material which conforms with particular requirements of the phonographic industry, offering a wide range of different coloured PVC options for clients: it can be standard classic black or other colour chosen from the colours chart available at MISTERDISCO. Records pressed by MISTER DISCO meet all the conditions and requirements included in the following document: *Standards for Stereophonic Disc Records*, releases by *Recording Industry Association of America (RIAA)* in 1963.

c) MISTER DISCO experts provide the utmost high level of transferring audio assets to vinyl record. Audio material adjusted properly to the vinyl record specificity is recorded on the lacquer plate (lacquer mastering). The equipment used in this process is **Neumann** cutting lathe. Lacquer plate with already cut audio material on it goes to galvanic department where its exact copy (negative) is prepared. This copy will be a stamper used in the final pressing process. Vinyl record has got two sides so it is needed to prepare two lacquer plates (one for side A and the other for side B), then after galvanic process, the final outcome is two stampers for pressing process.

Below there are two technical sketches which show measured and described vinyl records in all three available sizes, so: 12", 10" and 7".





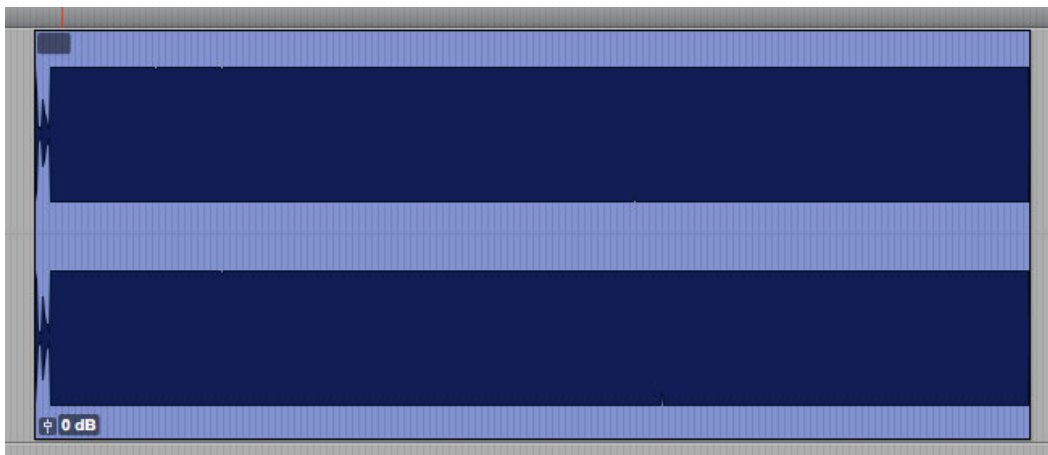
(Pic.1 – 12” and 10”, pic.2 – 7”; source: British Standard Specification for Analogue audio disc records and reproducing equipment, BS 7063:1989, IEC 98:1987).

2. Conditions of preparing suitable audio master for vinyl records manufacturing.

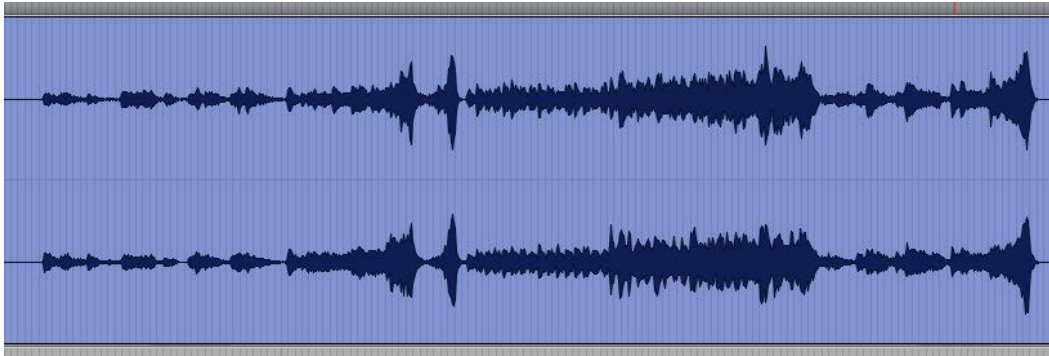
a) in order to reproduce audio material on vinyl record as much similar as only possible to the digital sources, it is strictly required that audio master is properly prepared in the very beginning. Despite of the vinyl record advantages as audio carrier, it also has some requirements and restrictions related to the production process. However, meeting these conditions allow pressing plant to manufacture and release high quality end-product which will reflect fully the artistic ideas of musicians and composers.

b) Audio master prepared for the production of vinyl record differs from the CD master. Taking into account the manufacturing process and the way the vinyl record is played, one's has to remember about that already at the stage of preparing source material. In order to avoid unnecessary problems and delays caused by necessity of adjusting the audio master to the particular requirements of the vinyl records, it is advised to pay attention on the following points:

- *Frequency range* – audio signal should not contain too much low frequencies (app. 20Hz) and high frequencies (app. 20kHz). Too much compression (pic. 3 and 4) can lead to extensive saturation (distorting audio signal) and in consequence the audio has to be volumed down. Attention should be also directed to the frequency level around 10kHz where in vocal lines so called **sibilants** can occurred – applying de-esser at the stage of master preparation can help avoiding typical for this frequency audio distortions.

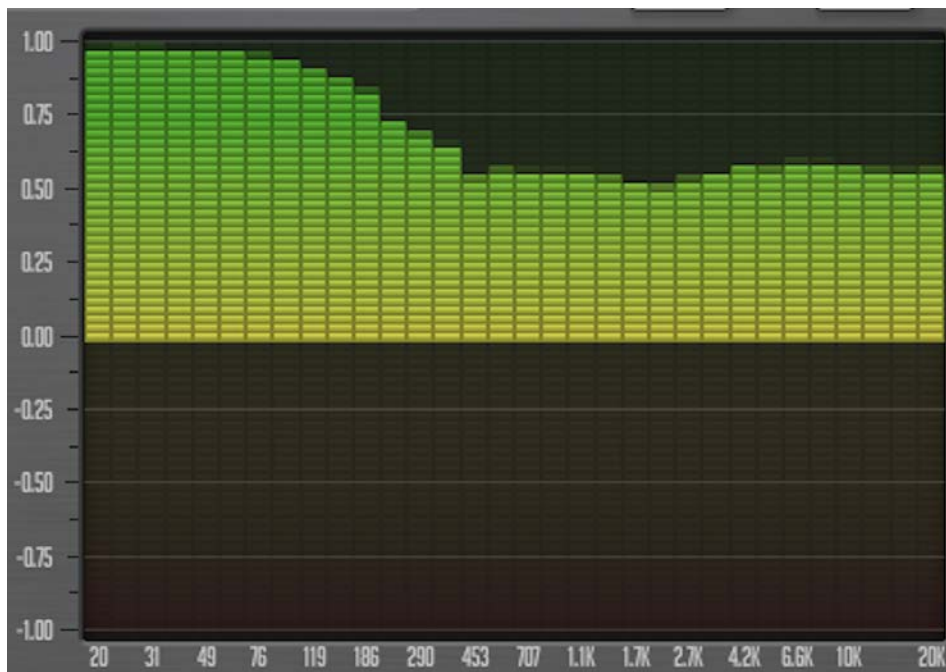


Picture 3. Example of audio file too much compressed.

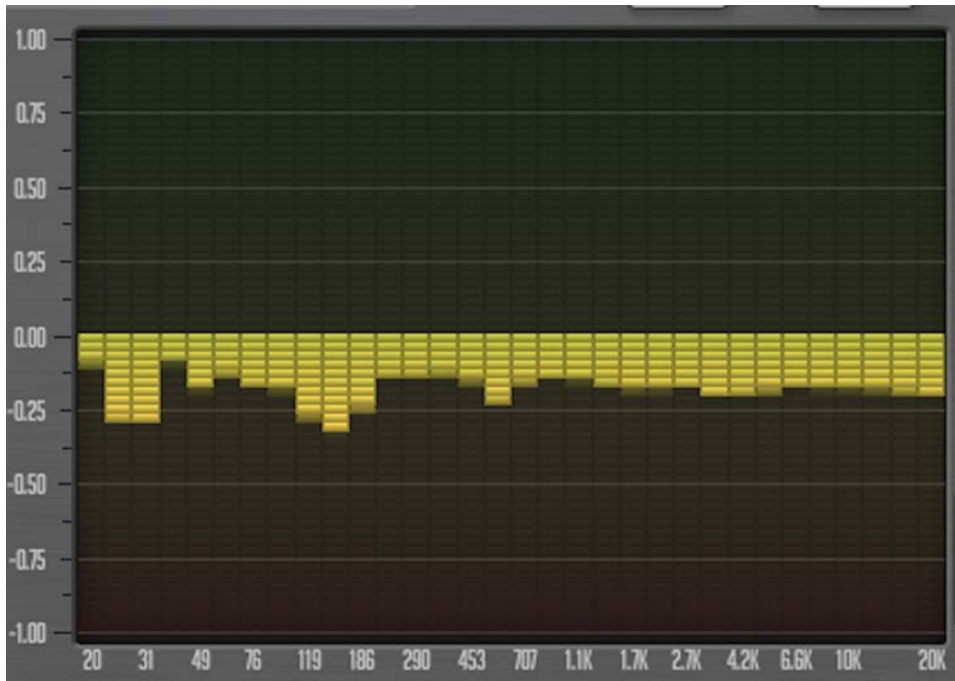


Picture 4. Audio file prepared correct, without extensive compression.

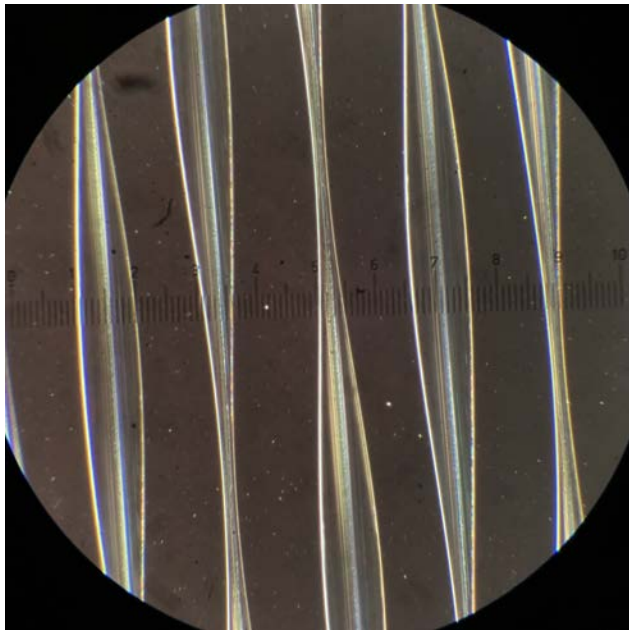
• *Phase correlation* – it is advised to check audio master by measuring the phase correlation (correlometer). In order to achieve the best possible results and match as close as possible the audio supplied by the customer, **the lowest frequencies of the acoustic area below 200Hz must be correct in phase** (pic. 5 & 6) so it means that the correlometer should indicate +1. In case of phase-incompatibility below 200Hz there might be groove vanishing issue (pic. 7 & 8) which causes the stylus skips the grooves. For the frequencies above 200Hz the correlometer should indicate at least +0,5.



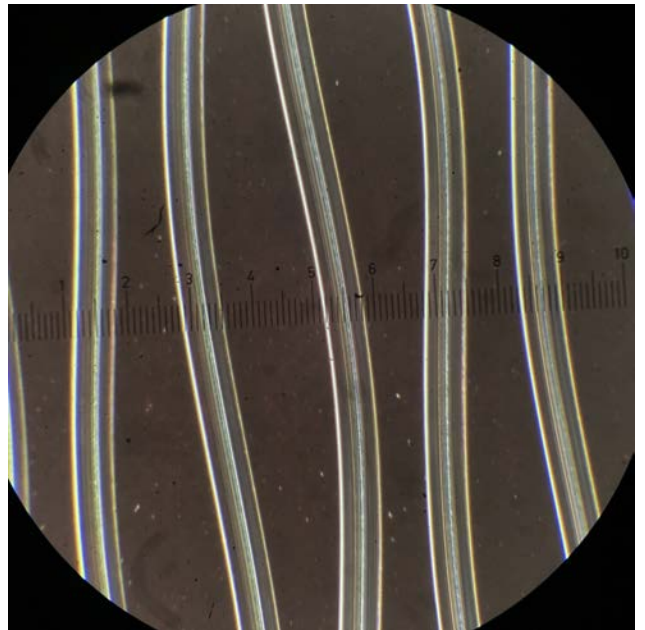
Picture 5. Example of the correct phase correlation.



Picture 6. Phase-incompatible audio file.



Picture 7. Groove fading due to phase incompatibility of the audio signal.



Picture 8. Correct grooves on the vinyl record.

• *Volume and length of the audio material* – the volume of the audio cut depends mainly on audio length as well as on the type of music (genre). The more “juicy” the music is, the shorter length of the vinyl record can be, taking into account the correct and suitable volume of the whole material. The suggested record length per side, with the highest possible volume, is presented by the table below.

DIAMETER (INCHES)	REVOLUTIONS PER MINUTE (RPM)	RECOMMENDED TIME OF ONE SIDE
12”	33 ⅓	20 (+/- 5min)
12”	45	15 (+/- 3min)
10”	33 ⅓	14 (+/- 3min)
10”	45	10 (+/- 2min)
7”	33 ⅓	7 (+/- 1min)
7”	45	5 (+/- 1min)

ATTENTION: please note the final possible side duration is depending on many factors such as: sound dynamic, frequencies range and others related to the characteristic of the vinyl records as well as the equipment used to press them.

General rule is that the higher volume of the audio is requested on the cut, the less space is available on the record, so eventually the one side duration is shorter. The opposite way: lower audio volume cut allows more space and side duration.

Furthermore, customer can find such definitions like:

• *standard cut* – it’s default cut option which minimize the risk of distortions in case of majority of the popular turntables; offers the best possible audio outcome by using only the necessary tools of sound preparation.

• *loud cut* – on customer request; high volume cut, possible in case of correct and good prepared source audio material – the potential risk of distortion in the highest volume areas of the sound and closer to the middle of the vinyl record must be excluded.

ATTENTION: the duration of the possible recording will be shortened.

c) it is recommended that the audio on the both sides of the record should be similar length – **volume level on the record is set according to the side which is longer time-wise.** Furthermore, when preparing audio master for the vinyl record pressing, it is advised **not to exceed the recommended duration of one side (see the table in sub-point b.)** – this will allow to avoid the possible decrease of the final sound effect. In order to have the best possible quality of the audio the most demanding tracks or songs which customer would like to expose the most, should be placed in the beginning of the vinyl record side, so the closest to the outer rim of the record. The conditions of playing the vinyl record getting worse as the stylus gets closer to the centre of the vinyl record.

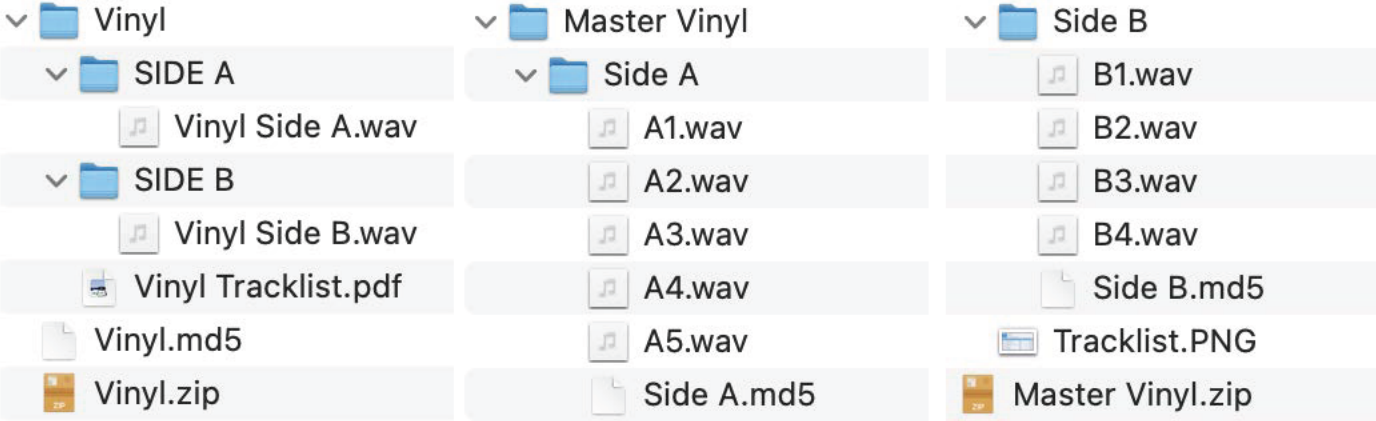
In case of any questions, doubts or exceptions in this specifications, please contact us. This is the easiest way to receive help, clarification and hints about preparing the source audio material which will comply the technical requirements and in result become the high quality finished product.

3. Supplying audio master – acceptable formats.

Just as important as the audio master preparation is the way and format of supplying it along with accompanied items. In order to avoid unnecessary delays and potential errors, customer is obliged to **check completeness, correctness and compliance all data and files before submitting.**

Number of tracks, their sequence, order of audio tracks per each side, names, duration of single songs as well as complete sides should be identical within all items so: audio master, label print, print parts.

a) catalogue (folder) with audio master as well as the other files needed to fulfil the purchase order should be consistent and described in a clear way which will not create any doubts about their purpose and conformity with placed purchase order (pic. 9, 10 & 11).



Pictures 9, 10 & 11. Examples of the clean and clear description of assets for production.

b) audio files **must be:**

- supplied in **one and only right version**. They should be assembled as sides of record **with the pauses between tracks include** or it is acceptable to have single audio files for each and every track **with the silence added at the end of each** (silence length should be in line with customer expectations).

Adding or adjusting the pauses or any kind of interference in the source material must a subject of the prior arrangements between MISTER DISCO and customer. Lack of the clear information in purchase order or correspondence (e-mail) about the aforementioned will lead to prepare and press the supplied audio as per the original files submitted and cannot be a subject of further claim.

- should be supplied in the correct format so as uncompressed audio files such as **WAV** or **AIFF**,

- should have frequency and bit resolution:

- at least: **44,1 kHz; 16 bit**,

- max.: **192 kHz; 32 bit**,

- should be accompanied by the tracklist which includes:

- tracks per sides,

- correct tracks sequence,

- tracks duration and/or indication about the beginning of each (it also concerned the hidden and/or bonus tracks) – this is required for correct applying the visual/optical markers (VTM – Visual Track Marker – Picture 12). The markers are created on record as wider grooves and help to notice with bare eye the start of tracks or pauses between them. At the same time markers do not have any influence on the recorded sound.

ATTENTION: clear information is needed, if customer don't want to apply VTMs on the vinyl record.



Picture 12. Visual markers – VTM's – indicating start of each track.

Vinyl Tracklist

Title: [REDACTED]

Created with: HOFA CD-Burn.DDP.Master (App) V2.5.8

Created at: [REDACTED]

9 tracks on 2 vinyl sides

Total time: 33:18.587

Side A (1 / 2):

5 tracks

Total time: 16:24.120

Track	Start	End	Duration	Info
01	00:00.000	03:20.787	03:20.787	Title: [REDACTED] Artist: [REDACTED]
Pregap	03:20.787	03:22.547	00:01.760	
02	03:22.547	06:58.627	03:36.080	Title: [REDACTED] Artist: [REDACTED]
Pregap	06:58.627	07:00.374	00:01.747	
03	07:00.374	09:59.400	02:59.027	Title: [REDACTED] Artist: [REDACTED]
Pregap	09:59.400	10:01.147	00:01.747	
04	10:01.147	12:41.027	02:39.880	Title: [REDACTED] Artist: [REDACTED]
Pregap	12:41.027	12:42.774	00:01.747	
05	12:42.774	16:24.120	03:41.347	Title: [REDACTED] Artist: [REDACTED]

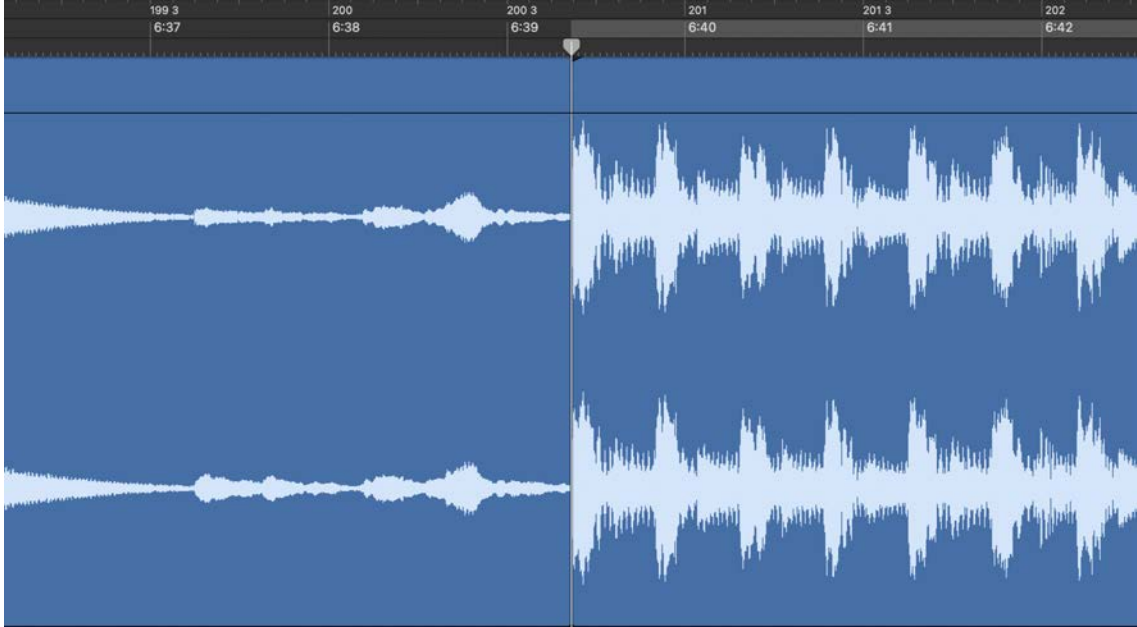
position on vinyl	title	time
A1	[REDACTED]	0:03:53
A2	[REDACTED]	0:03:25
A3	[REDACTED]	0:04:42
A4	[REDACTED]	0:03:18
A5	[REDACTED]	0:03:24
B1	[REDACTED]	0:03:44
B2	[REDACTED]	0:05:05
B3	[REDACTED]	0:07:18
B4	[REDACTED]	0:05:01

Picture 13 & 14. Example of the tracklist with complete information required to fulfil purchase order. On the left – complete record side, on the right – single audio files.

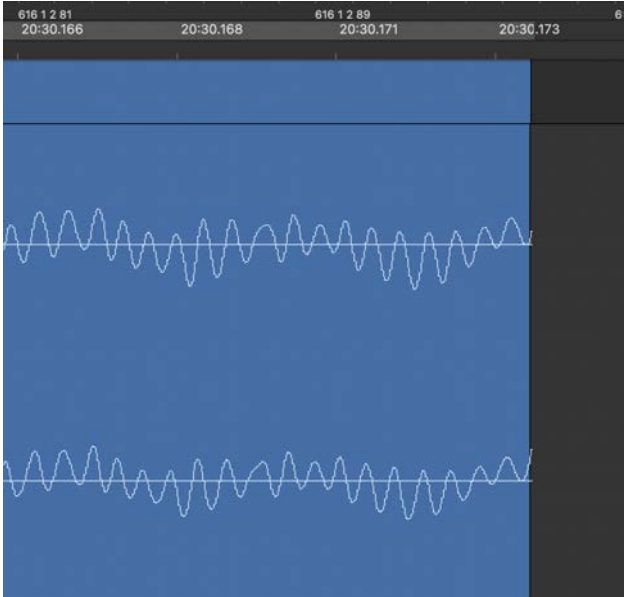
Track	Title	Length
1	[REDACTED]	
2	[REDACTED]	
3	[REDACTED]	
4	[REDACTED]	
5	[REDACTED]	
6	[REDACTED]	
7	[REDACTED]	
8	[REDACTED]	
9	[REDACTED]	
10	[REDACTED]	

Picture 15. Incorrect, uncomplete tracklist without tracks duration and sides split.

c) the special attention should be paid on the way the tracks end and if it's natural so without unexpected interruption/finish; with smooth transition to the next track or fade out, especially at the end of the sides. Also the proper and correct pauses between track or intentional lack of them should be checked (see the below pictures).



Picture 16. Transition between tracks without any silent-pause inbetween.



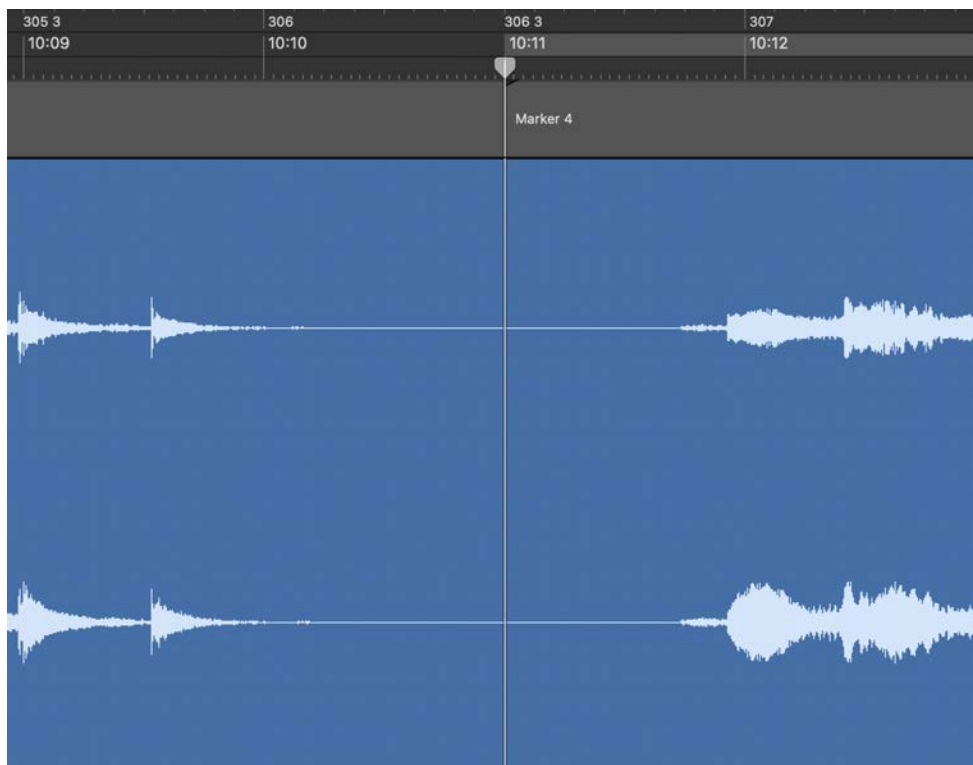
Picture 17. Sudden end of the track.



Picture 18. Faded out end of the track along with silence added at the end.



Picture 19. Prepared vinyl record side with smooth transition between tracks and marked place of VTM.



Picture 20. Prepared vinyl record side with silence added already by the customer.



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