

HOW TO PREPARE VINYL MASTER

To get the best results with your records, you need to read the following points before preparing your master source. Following these instructions will ensure that you are satisfied with the final product.

The ultimate goal of your creation is not only the recording on your tape-recorder, disk of your computer or on the "burnt CD-R", but on the sound disc, which you intend to offer to your listeners. However, before the recording created by you becomes the "black disc", it has to pass necessarily a long way – a number of technological operations. All this way has its limitations – determinate limits, which result from the physical laws. You certainly wish that the result of your work would pass this way without suffering any "scratches". In short, your situation is similar to the situation of a railway man, who has to load the goods so that the wagon would pass under a bridge, would go through a tunnel, would not exceed the bearing capacity of bridges, and at the same time the loading capacity of the wagon should be used as much as possible.

1. Try not to exceed the maximum recommended playing lengths per side, as longer playing times will lead to a dramatic decrease in recording level and dynamics. On the other hand, the requirements of extremely high recording levels decrease the possible playing time (see the table in the next section for recommended playing times for all formats).
2. Try to place demanding, powerful and exposed tracks at the beginning of the required side and not towards the end of the record. The conditions for recording and subsequent reading of vinyl records get worse with the decreasing diameter towards the middle of the record (the label).
3. Try to avoid using psycho acoustic processors to an excessive degree.
4. If possible, please check the master by using a correlation measurer (it must not be drastically in the red field or have negative values) and a frequency spectrum analyzer to ensure the signal does not contain unreasonably large elements in the low frequency range (around 20 Hz) and also the top end of the frequency zone (around 20 kHz).
5. The lowest frequencies of the acoustic zone that are below 300 Hz have to be in phase.
6. Filter away all inaudible signals to avoid possible problems during recording and reproduction, e.g. subacoustic signals below 20 Hz (better below 40 Hz) and high frequencies above 16 kHz.
7. If your recording substantially differs from natural sounds, which is caused by spreading out the energy in the acoustic zone, there is a risk of audible changes to the sound during the

transcription. This is due to the limitations of mechanical recording processes and can for example be caused by singing adjusted by processors or electronically generated effects. In the worst scenario where the signal/music has such critical characteristics that it may damage the cutting head, the order will unfortunately be refused.

8. AS STANDARD we choose the highest reasonably possible level in accordance with the character of the existing recording and with respect to the specific properties of the mechanical recording. If it is tolerated by the limit values of the recorder and by the playing time of recording, then it is possible - at Customer's express request (mostly DJ or rock and heavy-metal bands) – to use a higher level – LOUD, however on the side of reproduction it can be to the prejudice of distortion or stability of the tip.
9. Try to avoid 7" vinyl formats at 33 1/3 rpm as the possibilities of the recording and reproduction are most limited at this format. If there is no other solution you have to take into account that the final product will be in some way compromised *)
10. Remember that good reproduction results on the user's side depend on the quality, technical conditions and correct adjustment of the reproduction facilities! **)
11. We need a complete track list with your master containing the names of all tracks (including the hidden and bonus tracks), track timings and their separation into side A and side B, the total time of each side!!! Please inform us of any special effects or anomalies etc. Any orders without a complete track list will be refused for production.
12. Please carefully check if the data on the track list (number of tracks, track order, names and timings on each side) corresponds with the master, the label and cover artwork (and other printed parts - inserts, posters).
13. Please keep in mind that the data needs to be readable and understandable.
14. Any claims against the final product, caused by errors in the production parts supplied by customer, will not be accepted!
15. If you require additional adjustments or mastering (changes in track order, disregarding some tracks, compilation....) please specify your request exactly on the order form, and note what is on the master and what needs to be done for the final product.

* Low groove speed limits the recording level and causes a higher decrease of the high frequencies into the middle of the record and can also cause higher distortion levels.

** The quality of the reading system, the shape, the level of the attrition, the cleanness of the needle and the adjustment of the vertical force and anti-skating.

**Theoretical length of recording for various formats of the disc and types of recording
(informative values for one side of the disc)**

Typical average values of geometric parameters of the groove	[μm]	Size of disc	min @ 33 revolution	min @ 45 revolution
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For common music

basic width of the groove	40			
width of the mirror	10	Record 30 cm	19,38	14,36
horizontal amplitude	20	Record 25 cm	13,62	10,09
vertical amplitude	10	Record 17 cm	6,92	5,13

For techno etc.

basic width of the groove	50			
width of the mirror	10	Record 30 cm	11,45	8,48
horizontal amplitude	70	Record 25 cm	8,05	5,96
vertical amplitude	5	Record 17 cm	4,09	3,03

Extrem values *

basic width of the groove	100			
width of the mirror	10	Record 30 cm	7,20	5,33
horizontal amplitude	100	Record 25 cm	5,06	3,75
vertical amplitude	10	Record 17 cm	2,57	1,90

*It is applicable only in special cases, when it is not prevented by the frequency spectrum of recording and by limit values of the machine. A larger width of the groove than approximately 70 μm is feasible only on the lacquer foil, obviously to the prejudice of the attainable reproduction time, and with awareness of a certain damping on the high frequencies, especially at the center of the record, which is determined by the possibilities of lacquer technology.

All these information should help you to avoid the problems, which occur in practice most often. However in no case they can substitute the physics schoolbook, or the technical literature addressing the theory of mechanical recording of sound, musicology, technology of recording, physiology of hearing and other related branches, on which the top sound engineers draw in order to achieve the optimal results.

Please send any TECHNICAL QUESTIONS to mastering@gzvinyl.com