

USING THE METERS

Under normal conditions the meters on Masterphono will show the output level of the left and right channels in response to the record being played. Changing the GAIN setting will display on the meters proportionately. Changing the OHMS loading to a LOWER number will result in a lower meter level reading, whereas a higher number will result in a higher meter reading (do not infer this to mean one setting is better because it is louder – that is not necessarily the case.)

Plus, they can be fun to watch – some find them mesmerizing.

The meters are also there for the purpose of showing you the results of phono cartridge tweaking and assisting you in optimizing some aspects of your phono cartridge setup, particularly azimuth. This is accomplished by playing certain tracks of a specific test record and switching between several tests enacted via the METER button on Masterphono.

Currently, there are two recommended test records. The first (and to be used ONLY in METER TEST MODE 2) is “The ultimate analog test LP” from Analogue Productions (AAPT1). The second (and to be used ONLY in METER TEST MODE 3) is “Hi-Fi News Analogue Test LP (The Producers Cut)”

NOTE: These tones can be very loud and potentially damaging to your speakers or hearing. You MUST turn your system volume down or even OFF to prevent a potential problem. You cannot just MUTE Masterphono to prevent there from being any audible sound, as that would prevent the test signals from getting to the analysis circuitry.

Also, you should do as precise an offset and overhang cartridge alignment as you can and give a listen to your system before you start trying to use the METER modes to improve your setup. That way you will have familiarity with how things sound so you can assess any changes that you make.

First, let's get familiar with the METER button. It works differently from the other buttons, in that you must press and HOLD it for a few seconds for it to engage. This is to prevent you from accidentally entering the test modes. Recall that a quick press of the METER button will toggle the backlights on or off. If that is what you are seeing happen you are not holding the button down long enough.

When pressed and held the first time, the INPUT 1 indicator will blink, informing that you are in Meter TEST MODE 1 - CALIBRATE mode. Pressing and holding the METER button again will blink the INPUT 2 indicator, light the FILTER indicator, and enter TEST MODE 2 – AZIMUTH (when used with the Analogue Production disc.) Pressing and holding the METER button again will blink the INPUT 3 indicator and enter TEST MODE 3 – AZIMUTH (when used with the Hi-Fi News disc.) Lastly, Pressing and holding the METER button again will return MASTERPHONO to normal operation and the input you were on originally will be restored and its indicator lit solid.

NOTE that the only way to get out of any of the METER modes is to scroll through them one at a time by long-pressing the METER button. The order is always NORMAL-1-2-3-NORMAL.

FURTHER NOTE that while in any of the METER modes most of the knobs and buttons will no longer operate, or if they do, they will do different things than in normal mode. The exceptions are MUTE (pressing the GAIN knob IN) will always work, as will the power button if you need to shut MASTERPHONO off. Obviously, pressing either of these will interfere with any test being performed.

If you are using The Analogue Production disc, prepare by cuing up Side 1, Track 1 “1kHz reference tone...” of the test record. Enter TEST MODE 1 - CALIBRATE, and start playing the track. The LEFT meter will not move, but the RIGHT meter will. This indicates that sound is playing, and if your audio is on quietly you will hear the tone. Look closely at the meter position on the scale. You want it to read “0db” (calibration point “A”) on the scale. Now, turn the OHMS knob to adjust the meter reading. Turning left will move the meter lower, right will move it higher. Turn till it is as close to the “0” as you can get it. The

adjustments take place in 1/2dB increments, so just get as close as you can. You might have to restart the record track a few times since it is very short.

If you are using The Hi-Fi News disc, prepare by cuing up Side 1, Track 3 "Channel Balance..." of the test record. Enter TEST MODE 1 - CALIBRATE, and start playing the track. The LEFT meter will not move, but the RIGHT meter will. This indicates that sound is playing, and if your audio is on quietly you will hear the tone. Look closely at the meter position on the scale. You want it to read "0db" (calibration point "A") on the scale, but depending on your cartridge and gain setting it might read much less than that. Turn the OHMS knob to adjust the meter reading to get to 0db, if you can, otherwise to the maximum it will go to. Turning left will move the meter lower, right will move it higher. The adjustments take place in 1/2dB increments, so just get as close as you can. You might have to restart the record track a few times since it is very short.

Regardless of which record you are using, what happens if you cannot adjust close to "0db"? There are several possibilities. First is cartridge loading. If you are using too low an OHMS setting you might be choking off much of the usable output level of the cartridge. Check the manufacturer's recommendation for load, or use the rough rule of thumb of 10X the internal coil impedance. If that's not it, then perhaps you do not have sufficient gain set for your cartridge, or conversely if you cannot bring the pointer down enough you probably have the gain set too high. In any of these cases you will need to exit METER mode, change the OHMS or GAIN up or down as necessary, and do the calibration procedure again.

Now, for the Azimuth test.

With the Analogue Productions disc, cue up Side 1, track #4 "1kHz tone at -20db..." Press the METER button to switch to TEST MODE 2 - AZIMUTH and start playing the track. This test electrically subtracts the RIGHT signal from the LEFT signal and displays the difference of the two on a highly magnified scale on the meter.

With the Hi-Fi News disc, cue up Side 2, track #5 "300Hz tone at +6db..." Press the METER button to get to TEST MODE 2, then press it again to get to TEST MODE 3 - AZIMUTH and start playing the track. This test electrically adds the phase-inverted RIGHT signal to the LEFT signal and displays the sum of the two on a highly magnified scale on the meter.

Regardless of which disc you are using, when the channels are exactly the same amplitude then the difference between the two would be nothing and the meter would be all the way to the left. That will not happen in reality because the channels will never be exactly the same because records, turntables, arms and cartridges have all kinds of artifacts that this test mode will greatly amplify and show on the meter. The goal, however, is to adjust the cartridge azimuth (it's rotation and viewed from the front) so that you bring the average pointer position down as low as you can. Assuming you start with the cartridge roughly parallel (more accurately the cantilever perpendicular) to the record then twisting the cartridge left will increase the pointer and then twisting it right will decrease the pointer to a null and then it will increase it again. This indicates you have moved through the optimum location. Keep trying till you are making smaller and smaller movements till you finally can't get it any better. You will need to keep replaying the track as this is a very fussy adjustment. Also, you have to be very perceptive because you are seeing the results of the tone subtraction along with all of the other "noisy" influences the meter will indicate. With practice you can see through this interference and get it virtually perfect; as well or better than other methods we have tried.

Exit METER modes by pressing and holding the METER button one last time, returning you to NORMAL mode, which will be indicated by the INPUT indication being lit solidly.