

# Morel Transmission Line Loudspeaker

[www.moreleurope.com](http://www.moreleurope.com)

Morelline mk2

General:

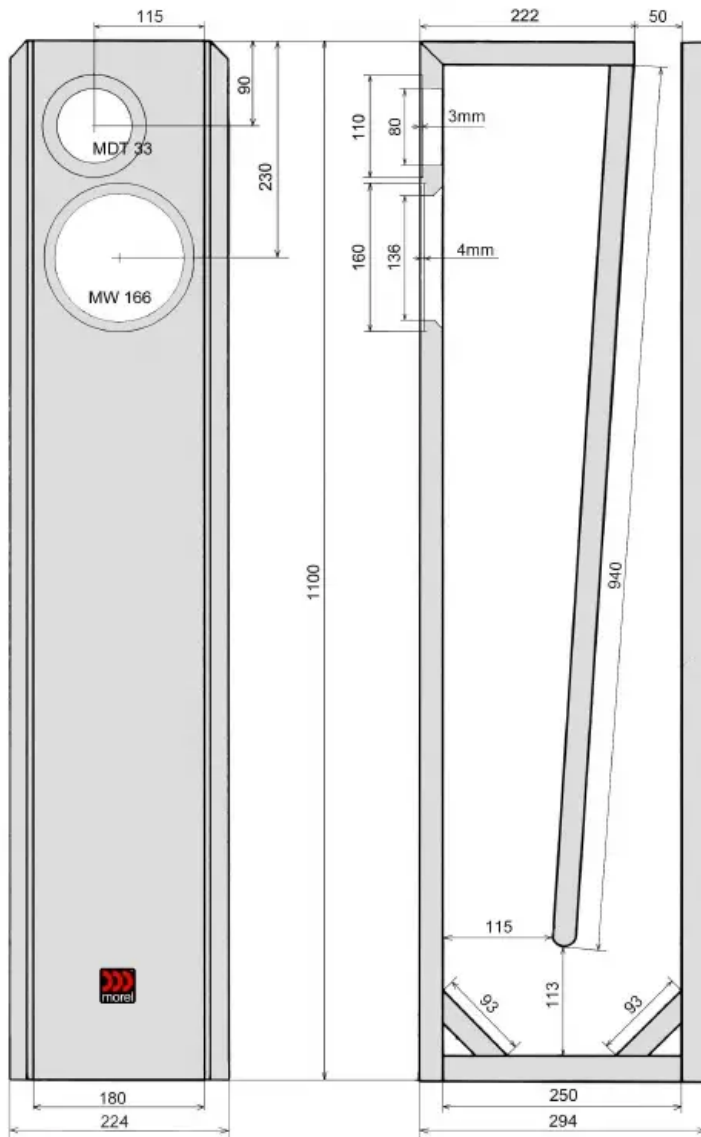
**The Morelline is originally a transmissionline design from the German DIY magazine Klang & [Ton.In](#) these mkII design the crossover as well as the (for TML very critical) damping are changed, because we felt we could do it better. The by us, primary acoustic overhauled MORELLINE mk2 is a 2-way system with very high quality components. Unlike the mostly big size of TML-designs the height is just 110cm with a depth of 30cm. Therefore it can still find its place in most livingrooms. The height is even an advantage, because all speakers are above most furniture level.**

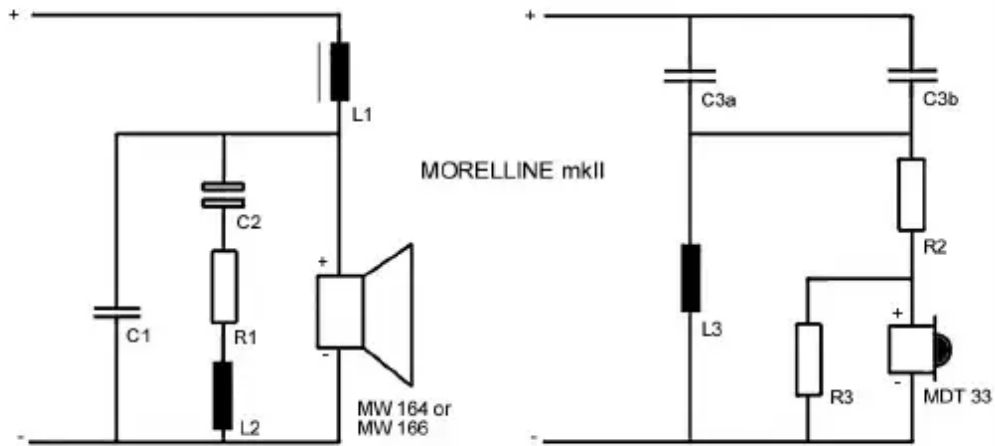
The cabinet:

The cabinet is now made of 22mmMDF. The fronts are angled 45

°

, but leave some mm's untouched. Very slightly (1-2mm) edge the corners from side and front panels, so a groove appears in the front. This gives the speaker a smaller look. We didn't put the tweeter in the middle, but off-centered it to improve staging. You have to mirror the right speaker. Of course you can decide to put the tweeter in the middle also. Take good care of alignment of the center panel, because otherwise the TL is not functioning properly. It should be getting smaller without a certain sudden change on the way to the end. Therefore rounden the end. If you can get flexible material you could also decide to rounden the bottom side instead of using the two corner panels. Screw the bottom to the cabinet to have access inside if you like to change something. With TL there are always improvements to be made. Mount the crossover behind the tweeter, not like in the K&T example in the bottom to avoid turbulence in the tube.





- C1 = 2,7  $\mu\text{F}$  MKP 400V 3%
- C2 = 5,6  $\mu\text{F}$  bipolar glatt 50V
- C3a= 5,6  $\mu\text{F}$  MKP 400V 3%
- C3b= 1,5  $\mu\text{F}$  Tinfoil 2%
- L1 = 1,50 mH HQ core coil
- L2 = 0,18 mH 0,5mm air coil
- L3 = 0,68 mH 0,7mm air coil
- R1 = 2,2  $\Omega$  5W induction free
- R2 = 6,8  $\Omega$  9W induction free
- R3 = 4,7  $\Omega$  9W induction free

The units:

The famous MDT 33 was till 2002 for 25 years the reference tweeter of MO-REL. The triple magnetsystem and Hexatech voicecoil drives a 28mmcoated softdome. Due to the characteristics a nearly theoretical crossovercan be [used.Today](#) you could also decide for today's best tweeter in the world: ourSupreme 110 tweeter. An American car audio magazine gave this tweeter30 out of 30 points leaving f.e. the Revelator way behind (22 points?). Theydid their most best to find anything not OK, but even the matching wasperfect. The size of the faceplate and sensitivity are equal to the MDT 33.The best selling MOREL woofer is powered by a huge 75mm fullaluminium "hexatech" voicecoil with internal air-cooled magnet system.These drivers can, like most or our drivers, handle a tremendous powerwithout coloration or compression effects, way beyond the level youprefer to listen to.Two types can be used: we prefer the MW166 with DPC-cone forpopular music or the MW 164 with coated paper cone if you prefer toreal "acoustic" instruments. Due to the similar characteristics within theworking range no serious changes have to be made in the crossover.

The crossover:

Unlike the first version we prefer a 12/12dB Linkwitz-Riley crossover. The fase-linear behaviour matches thecharacteristics of the used drivers. Like most of our DIY models we tune mostly by listening and listening and....well youknow what we mean. That's what makes DIY gives this fun, try to beat us.Due to the very low resistance and therefore a better control by the amplifier we use a high quality core coil. A small diparound 4kHz is straightened with the circuit C2/R1/L2. Als for the tweeter we use just 12dB/okt. (C3/L3). Because of the better performance we parallel a MKP with a superfasttin foil type. R2/R3 bring down the efficiency to match the woofer.  
C1 = 2,7  $\mu$ F MKP 400V 3%C2 = 5,6  $\mu$ F bipolar glatt 50VC3a= 5,6  $\mu$ F MKP 400V 3%C3b= 1,5  $\mu$ F Tin foil 2%L1 = 1,50 mH HQ core coilL2 = 0,18 mH 0,5mm air coilL3 = 0,68 mH 0,7mm air coilR1 = 2,2  $\Omega$  5W induction freeR2 = 6,8  $\Omega$  9W induction freeR3 = 4,7  $\Omega$  9W induction free

The damping:

The damping of a TL is always special; mostly people use Dr. Bailey's longhair. We always try new things and were veryhappy with Nimbus Bofoam, unfortunately hard to get. The absorption curve of this rubber based material is just perfectfor TL, it is most effective from 200Hz up, just what it should do in a TL. We glued three sides of the tube with thismaterial and the fourth (front/back) sides with regular eggbox foam. Adding other material decreases the sound qualityand/or effects the pace and rythm, mostly a problem with TL's.Due to the open tube it is as fast as a closed box, howeverthe low frequency responce will amaze you and is worth building this interesting speaker design.

Notes:

For further details about MOREL, the Home Theatre, Car-hifi, our drivers program and other DIY designs feel free to visit our website. Datasheets with full specs. and graphs. of all drivers are easy downloadable by AcrobatReader. So, finally after 25 years all MOREL specs are available from your computer. With the internet we like to introduce something new: if you have built a speaker with all MOREL drivers inside, or have made improvements on any published DIY design feel free to share it with us all.

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