

**Bold North Audio MS10-W - The First Accurate Sonic Match
to the Iconic Yamaha Woofer**

The Yamaha™ NS-10M™ near-field monitor loudspeaker is an icon in the recording industry. It is the de-facto standard in both professional and home recording studios worldwide. Unfortunately, the product has been discontinued and Yamaha-made replacement parts are no longer available.

MISCO has answered the need with the MS10-W direct replacement woofer driver for NS-10M loudspeakers. The MS10-W *exactly matches the sound* of the Yamaha woofer more accurately than any manufacturer has ever done.

Using state-of-the-art laser-based measurement tools, MISCO engineers were able to pinpoint those factors that make an NS-10M driver sound like it does, and choose the materials and tuning needed to match the iconic NS-10M sound.

- Seamed paper cone for accurate reproduction of the NS10-M woofer timbre
- Klippel Verified - designed and 100% tested with state-of-the-art Klippel measurement tools
- Edge-wound copper voice coil
- 90dB sensitivity
- Black powder-coated steel basket

The MS10-W is packaged and sold individually, but **MISCO highly recommends that NS-10M™ owners replace both woofers at the same time.** Original drivers may "work" but their suspensions have likely fatigued over time and no longer perform as they should. For the best imaging and sound staging, it is essential that the left and right speakers be as closely matched as possible. Replacing both midwoofers with MS10-Ws, in essence, brings the speaker system back to the sound of a new pair of NS-10M's (assuming the tweeters and crossovers are working correctly). **Purchase TWO for the best results!**



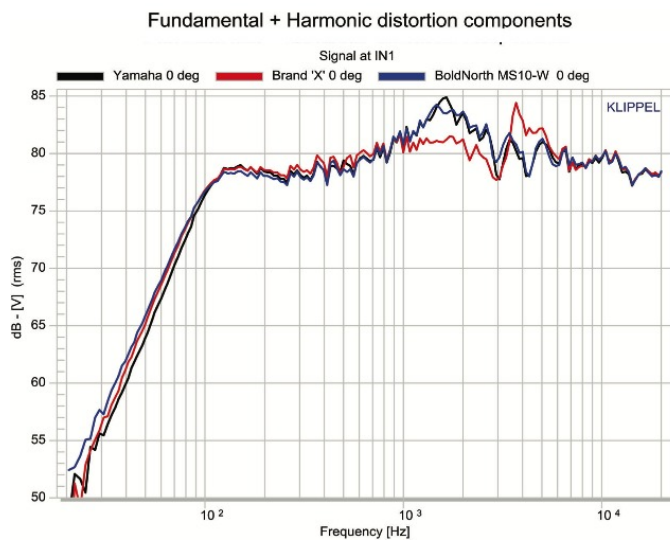
Primary Specifications

Size, Nominal (inch & mm)	7" (178 mm)
Rated Impedance (Ω)	8
Continuous Power (W)	30
Sensitivity (dB SPL) ¹	90.4 @ 1watt / 1 meter
Frequency Range (Hz)	54 - 5, 200
Resonant Frequency (Fs) (Hz) +/- 15%	54

How was this product created?

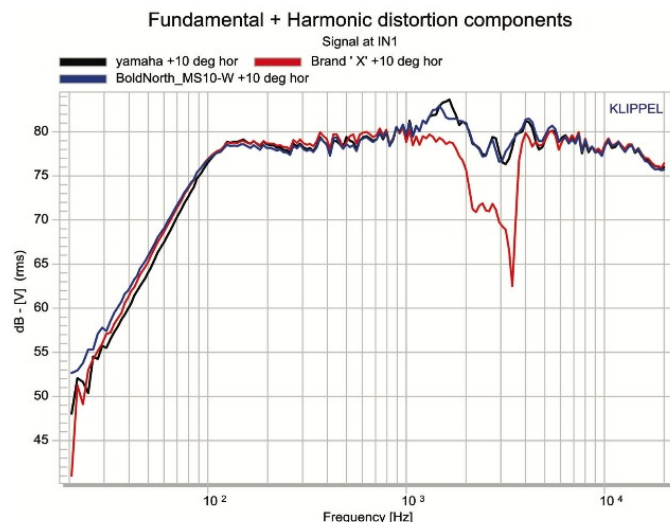
The Bold North Audio (BNA) teams of designers and engineers have harnessed cutting-edge Klippel vibrational analysis science to reveal the keys to superior audio performance. While they rely heavily on objective science to lead them, they are not slaves to it and understand that most of all speakers need to tell the musical truth. BNA's engineers, musicians, and recording studio veterans are the final judges of when a design is worthy of the Bold North Audio logo.

**Yamaha is a registered trademark of Yamaha Corporation and Bold North Audio has no relationship, nor does MISCO/Minneapolis Speaker Company.*



On-axis frequency response measured with Klippel NFS:
Yamaha black, BNA MS10-W blue, competitor "A" red.

The differences are even more striking when comparing off-axis performance as shown in the graphs below.



10-degrees off-axis frequency response measured with Klippel NFS:
Yamaha black, BNA MS10-W blue, competitor "A" red.

More Specifications

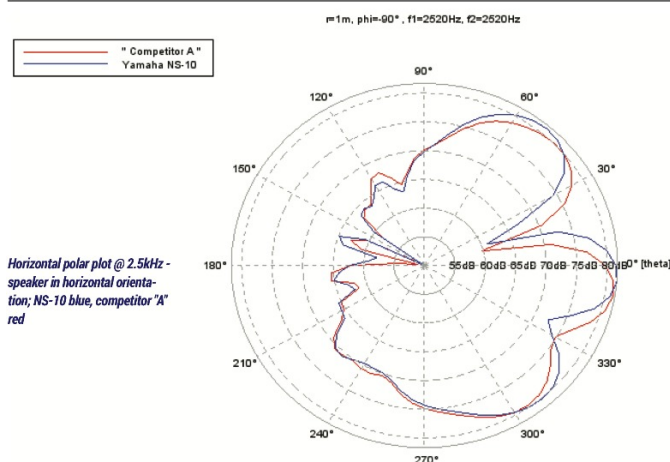
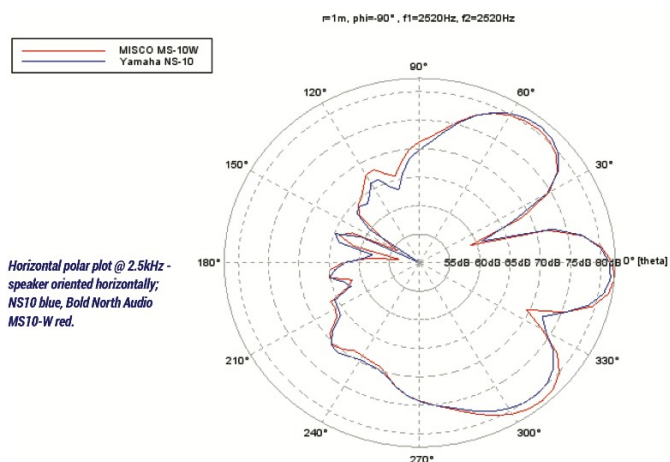
Application	Musical Instruments, Pro Sound
RoHS Compliant	Yes
DC Resistance (Re) (Ω)	6.3
Program Power (W)	60
Continuous Power (W)	30

Small Signal Parameters

Nominal Impedance (Z) (Ω)	8
DC Resistance (Re) (Ω)	6.3
Voice Coil Inductance (Le) (mH)	0.62
Resonant Frequency (Fs) (Hz) +/- 15%	54
Mechanical Q Factor (Qms)	10.25
Electrical Q Factor (Qes)	0.60
Total Q Factor (Qts)	0.57
Moving Mass (Mms) (gm)	12.8
Suspension Compliance (Cms) (mm/N)	0.694
Mechanical Resistance (Rms) (kg/s)	0.421
Surface Area of Diaphragm (Sd) (cm ²)	168.6
Compliance Equivalent Volume (Vas) (L)	27.92
Maximum Linear Excursion (Xmax) (mm)	3.85
Coil Winding Height (mm)	12.7
Magnetic Gap Height (mm)	5.0
Motor Force Factor (BL) (T•M)	6.7
Efficiency (η_0) (%)	0.68
Efficiency Bandwidth Product (EBP) (Fs/Qes)	89.0
Motive Force (BL ² /Re) (T•m ²)/ Ω)	7.18

Material Descriptions

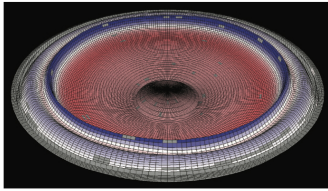
Basket Type	Stamped Steel with black powder coat
Terminal Size (mm)	2.8 mm (0.110")
Voice Coil Diameter (mm)	31
Voice Coil Wire Material	Copper, single layer (Edgewound)
Voice Coil Former Material	Paper
Magnet Material	Ferrite
Magnet Weight (g)	394



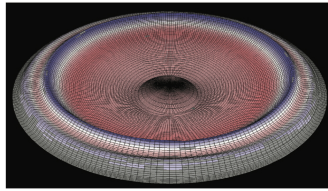
The images below are Klippel scans showing SPL output across the cone surface at 2kHz and 3kHz. Again, the Bold North Audio driver is nearly identical to the original Yamaha. These frequencies are particularly important as they lie at and just beyond the crossover center point. Miss here and you've missed the fundamental character of the NS-10, and missed the goal to sound the same.

Cone Body Material	White seamed paper
Cone Surround Material	Treated Fabric
Spider Material	Conex
Dust Cap Material	White paper

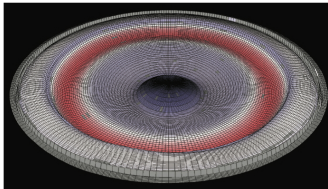




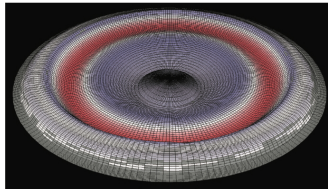
Yamaha, 2kHz



MS10-W, 2kHz



Yamaha, 3kHz



MS10-W, 3kHz

