

***To build a dual, horn-loaded bass cabinet with
2x NTR21-5010JD loudspeakers***

APPLICATION NOTE

CELESTION

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NTR21-5010JD dual horn-loaded bass cabinet: Design/Build Notes

This dual horn-loaded bass cab is designed specifically for use with 2x NTR21-5010JD neodymium magnet, cast aluminium LF drivers. Specifications are:

Material	18mm birch plywood
Drivers	2 x NTR21-5010JD
Max continuous SPL (predicted, single box)	138dB 1-watt/1m (-6dB at 45Hz.)
Recommended high pass filter	Butterworth: 24 dB/octave 40Hz cut-off

Production Notes:

DXF file with all appropriate measurements supplied.

There are three layers of wood in front of the drive unit that combine to form the “horn mouth”.

1. **Gasket.** Solid layer with hole cut-out ready for driver front-mounting*
2. **Slot.** Solid layer containing a horizontal slot with rounded ends that forms the horn throat*
3. **Spacing.** 2x 125mm wide pieces of wood, mounted horizontally either side of the slot (layer 2.)
4. **Brace.** Fixes layer 2 (slot panel) to the back of the box (for strength). It is 110mm wide at the ends where it connects to second layer. 50mm in the centre where it faces the drive unit throat slot.

*Height is 590mm, this is correct for butt joints. If rebates are used (preferable), this dimension should be increased 2x rebate depth.

The size of the internal cavity is calculated for the back load on the drive unit.

Driver access port is shown by a dotted line. Drive unit should go through this hole! Allow 25mm overlap for door mounting and sealing (the door will need to be sealed and air tight).

The cabinet should be built as a solid, non-resonant box with well sealed and secured joints. This particular design uses 18mm plywood. Advantages are strength, durability and availability.

The panel joints shown are simple butt joints that are screwed and glued. For those with advanced wood-working skills, more sophisticated joints can be used. Whatever joint type you use, it is important they are secure and airtight.

Speakon or other high-power compatible connectors can be used, along with appropriate high current cabling. When fitting, we recommend soldering on flying leads, mounting the socket then making airtight with a sealing compound.

Use mounting bolts and T-nuts to fix the driver to the baffle. **NTR21-5010JD** is compatible with M8 bolts.

A wide range of speaker cabinet accessories is available, including handles, grilles and corners, adding to convenience and durability. These should be fitted carefully so as not to weaken the box or cause leaks.

Operational Notes:

Use of a high pass filter is recommended to ensure no high level input is presented to the box below its lower limit. This is because, for very low frequency signals, the driver becomes “unloaded” (i.e. the box effectively disappears.) Under these circumstances, driver excursion increases rapidly, making the possibility of damage more likely.

For this **NTR21-5010JD** cabinet, a suitable value for this filter is 40Hz. A sharp corner to the cut-off would be desirable, so a 24 dB/octave Butterworth filter or similar is recommended.

NTR21-5010JD Specification

General Specifications

Nominal diameter:	530mm/21in
Power rating:	1600Wrms (AES Standard)
Nominal impedance:	8Ω
Sensitivity:	98dB
Frequency range:	30Hz-3000Hz
Voice coil diameter:	125mm/5in
Chassis type:	Cast aluminium
Magnet type:	Neodymium
Coil material:	Round copper
Former material:	Glass fibre
Cone material:	Carbon fibre loaded paper
Surround material:	Cloth sealed
Suspension:	Double
Xmax:	9mm/0.35in
Gap depth:	12mm/0.47in
Voice coil winding width:	30mm/1.18in

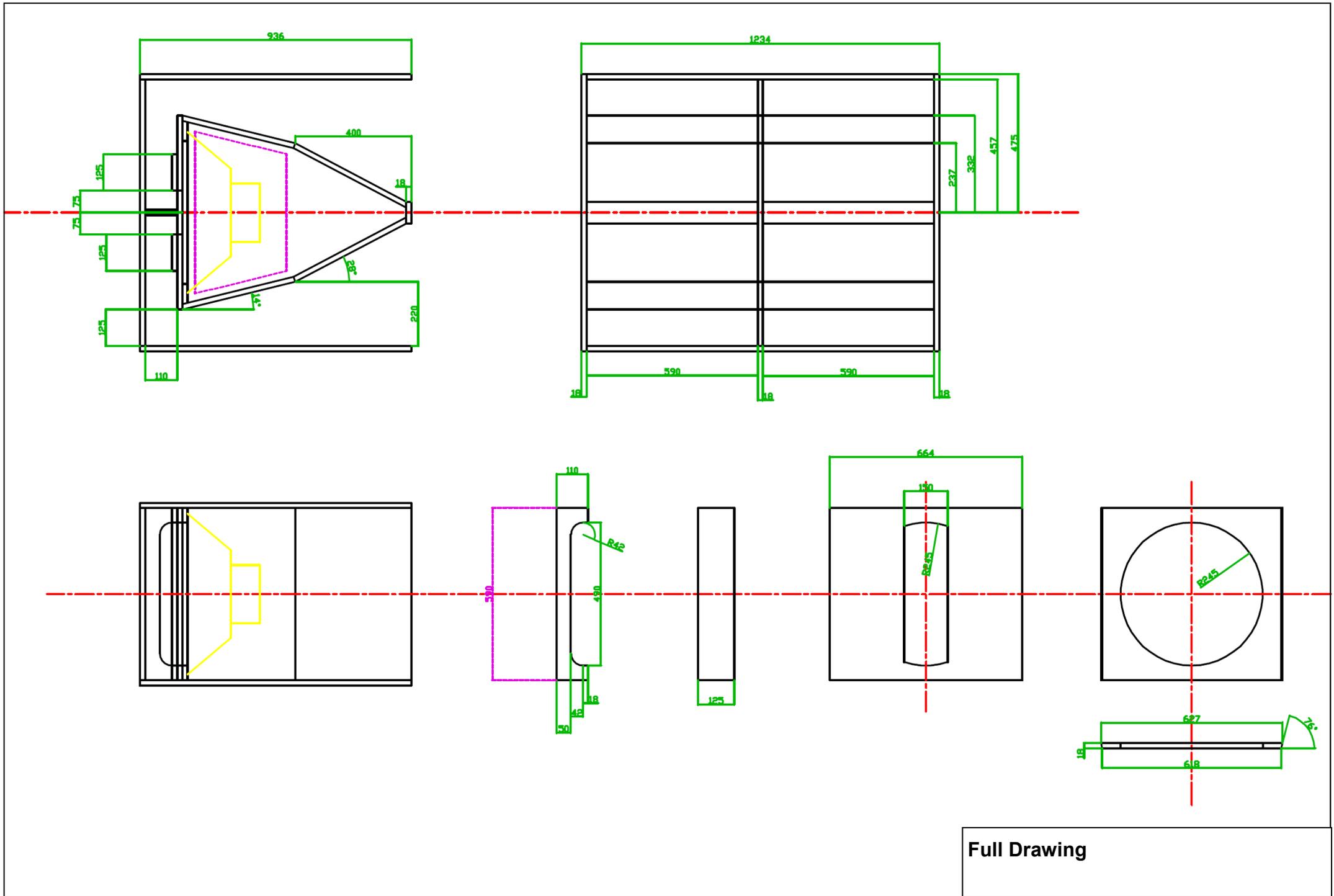


Small Signal Parameters

D:	0.46m/18.11in
Fs:	30.2Hz
Mmd:	280.52g/11.26oz
Qms:	5.231
Qes:	0.0.309
Qts:	0.291
Re:	5.36Ω
Vas:	341.43lt/12.05ft3
Bl:	32.93
Cms:	0.087mm/N
Rms:	11.55kg/s
Le (at 1kHz):	2.063mH

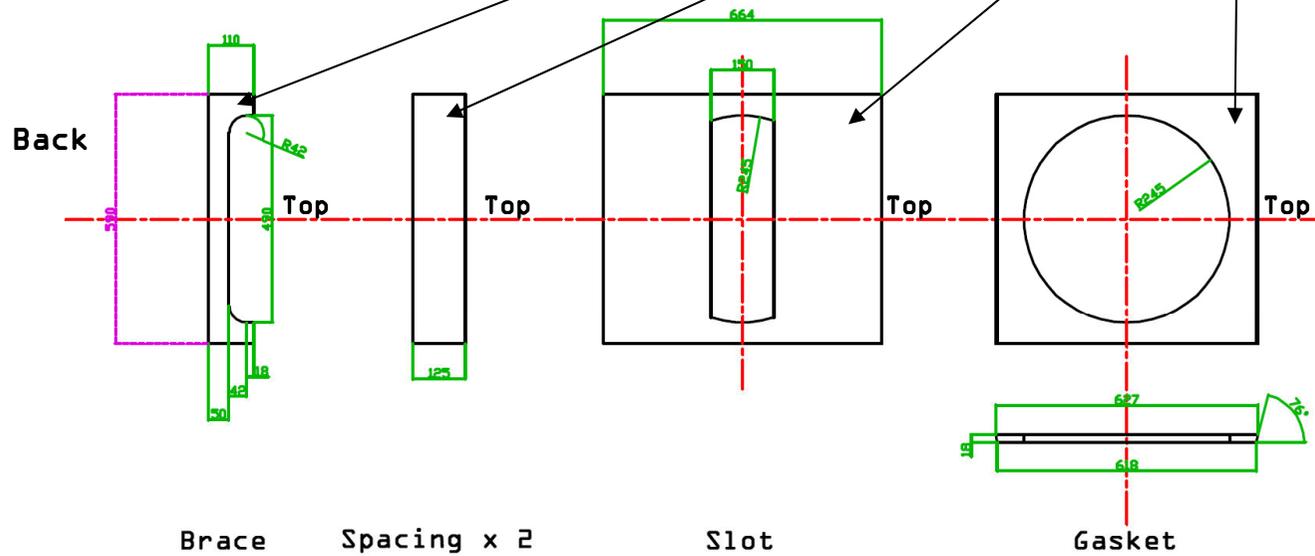
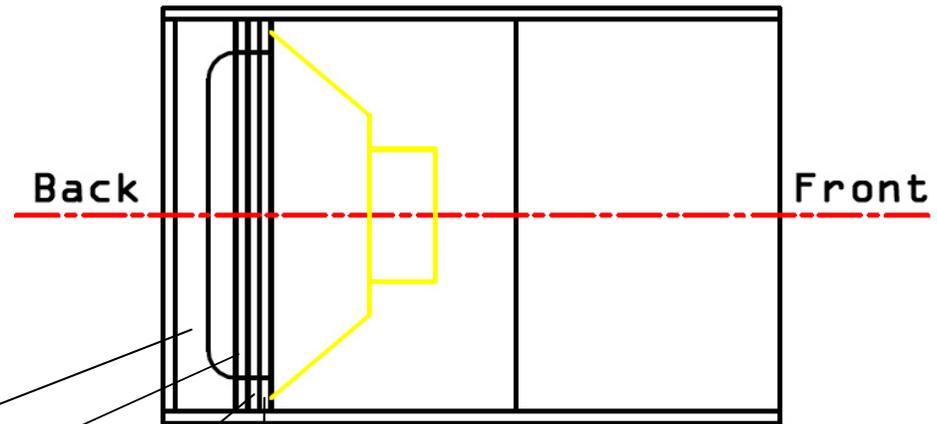
Mounting Information

Diameter:	550mm/21.65in
Overall depth:	254/10in
Cut-out diameter:	492mm/19.37in
Mounting slot dims:	12.5mm x 8mm/0.49in x 0.33in
Number mounting slots:	8
Mounting PCD range:	520-5281mm/20.5-20.8in
Unit weight:	12.8kg/28.2lb



Full Drawing

Overhead View of Enclosure



Front

Notes

1. Construction identical for both enclosures, A and B.
2. Speaker front mounted onto gasket using M8 bots
3. 2x 125mm wide spacing pieces, positioned horizontally, either side of slot
4. Brace fastens slot layer to back panel

Cabinet Plan

Overhead view