CKT-TF1020 System

The CKT-TF1020 system is a compact 2-way speaker design suitable for stand or floor mounting. This system comprises the TF1020 10”(250mm) bass/midrange driver and CDX1-1445 compression driver fitted with the H1-7050 ‘NoBell’ horn. It is a versatile and highly portable system that offers good performance when used either stand-alone or with a sub-woofer. The 70x50 horn ensures good dispersion in both the horizontal and vertical planes, making it equally useful when mounted upright or on its side. For dedicated use as a floor monitor the horn can be rotated through 90 degrees.

Components				
System	Bass Driver	Compression Driver	Horn	Crossover
CKT-TF1020	TF1020	CDX1-1445	H1-7050	CX-TF1020

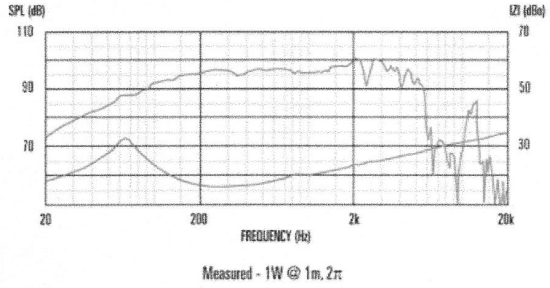
CELESTION

LF Pressed Chassis / Ferrite

TF1020

- 10" bass and mid-range driver provides 97dB sensitivity and 150Wrms (AES standard) power handling
- 2" High temperature copper voice coil wound on polyimide for increased reliability
- Ideally suited to compact enclosures and high pass systems
- Rigid chasis design for maximum energy transfer
- Kevlar-loaded cone with sealed surround and damping for reduced distortion

8 Ω Frequency Response



1. Tested for two hours using a continuous, band-limited pink noise signal as per AES standard. Power calculated on minimum impedance. Loudspeaker tested in free air.
2. Continuous Power Handling is defined as 3dB greater than the AES rating.
3. Tested as per the EIA-426-A standard.
4. Measured on axis at 1W, 1m in 2 anechoic environment.
5. Xmax derived from: (voice coil winding width-gap depth)/2.
6. Small signal parameters measured after unit subjected to pre-conditioning signal.

General Specifications

Nominal diameter	254mm/10in
Power rating [1]	150Wrms
Continuous power rating [2]	300W
EIA power rating [3]	250W
Nominal impedance	8 Ω
Sensitivity [4]	97dB
Frequency range	60-3000Hz
Voice coil diameter	50mm/2in
Chassis type	Pressed steel
Magnet type	Ferrite
Magnet weight	1.2kg/42oz
Coil material	Round copper
Former material	Polyimide
Cone material	Kevlar loaded paper
Surround material	Cloth-sealed
Suspension	Single
Xmax [5]	2mm/0.08in
Gap depth	8mm/0.31in
Voice coil winding width	12mm/0.47in

Small Signal Parameters

D	0.21m/8.27in
Fs	60.9Hz
Mms	30.92g/1.09oz
Qms	2.853
Qes	0.361
Mmd	27.27g/0.96oz
Qts	0.32
Re	5.79Ω
Vas	37.45lt/1.32ft3
Bl	13.79Tm
Cms	0.221mm/N
Rms	4.15kg/s
Le (at 1kHz)	0.59mH

Mounting Information

Overall diameter	256mm/10.08in
Overall depth	110mm/4.33in
Cut-out diameter	229mm/9.02in
Mounting slot dimensions	8mm x 6mm/0.31in x 0.24in
Number of mounting slots	4
Mounting PCD range	245mm/9.65in
Unit weight	3.7kg/8.2lb

Packed Dimensions & Weight

Single pack size W x D x H	280mm x 280mm x 120mm /11.0in x 11.0in x 4.7in
Single pack weight	4kg/8.8lb
Multi pack size W x D x H	1080mmx880mmx840mm /42.5in x 34.6in x 33.1in
Multi pack weight	390kg/860lb

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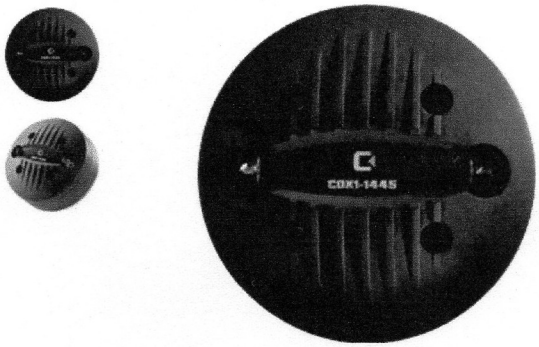
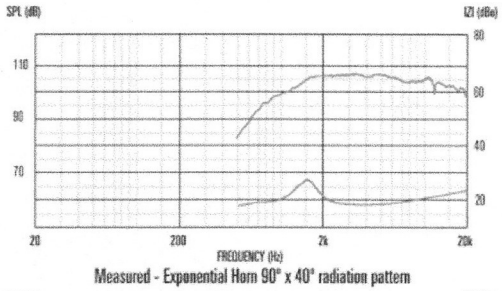
Compression Drivers / Ferrite

CDX1-1445

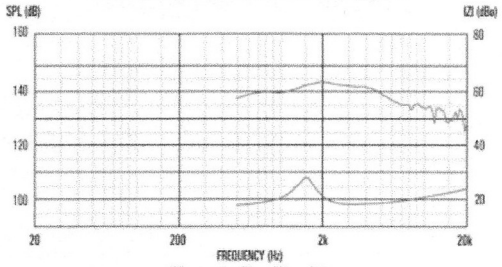


- 1" exit lightweight and compact ferrite magnet compression driver with1.4" copper clad aluminium voice coil
- 20Wrms power handling (AES standard) and 106dB sensitivity
- One piece PETP diaphragm and surround
- Finite Element Analysis (FEA) techniques used to optimise both magnetic and acoustic design
- Suitable for 2-way and 3-way systems

8 Ω Frequency Response



Measured - Exponential Horn 90° x 40° radiation pattern



Measured - Plane Wave Tube

1. Tested for two hours on plane wave tube using continuous band-limited pink noise as per AES standard. Power calculated on minimum impedance.
2. Continuous Power Handling is defined as 3dB greater than the AES rating.
3. Measured on axis at 1W/1m, using typical horn, in 2 anechoic environment.

General Specifications

Power rating [1]	20Wrms
Continuous power rating [2]	40W
Nominal impedance	8/16Ω
Frequency range	1500-20,000Hz
Sensitivity [3]	106dB
Recommended min. crossover (12dB/oct)	2200Hz
Voice coil diameter	35mm/1.4in
Voice coil material	Copper clad aluminium
Magnet type	Ferrite
Diaphragm material	PETP film
Surround material	PETP film

Mounting Information

Width	90mm/3.54in
Depth	46.5mm/1.83in
Weight	1kg/2.2lb
Fitting	Flange (4 x M6 holes on 76mm /3in PCD)
Throat exit	25mm/1in

Packed Dimensions & Weight

Single pack size W x D x H	
Single pack weight	
Multi pack size W x D x H	500mm x 485mm x 110mm /19.7in x 19.1in x 4.3in
Multi pack weight	8.8kg/19.4lb

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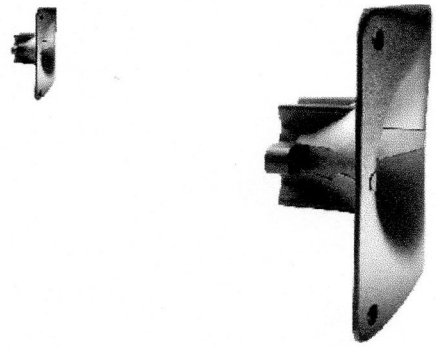
CELESTION

Horns

H1-7050 'NoBell'



- Cast aluminium horn flare with 1" throat exit • Compatible for use with bolt (flange) fitted compression drivers only• Features embedded elastomer side panels that make it acoustically inert• Exponential horn flare with 70 x 50 radiation pattern• 1.5kHz cut-off frequency

General Specifications

Horn type	Exponential
Radiation pattern	70º x 50º
Horn material	Cast Aluminium
Baffle cut-out	55mm/6.1in
Driver mounting detail	2 M6 holes on 76mm/3in PCD
Throat exit	25.4mm/1in.
Height	180mm/7.1in
Width	180mm/7.1in
Depth	90mm/3.5in
Weight	0.7kg/1.5lb

Packed Dimensions & Weight

Single pack size W x D x H	190mm x 190mm x 65mm /7.5in x 7.5in x 2.6in
Single pack weight	1.0kg/3.3lb
Multi pack size W x D x H	390mm x 390mm x 560mm /15.4in x 15.4in x 22in
Multi pack weight	18kg/39.6lb

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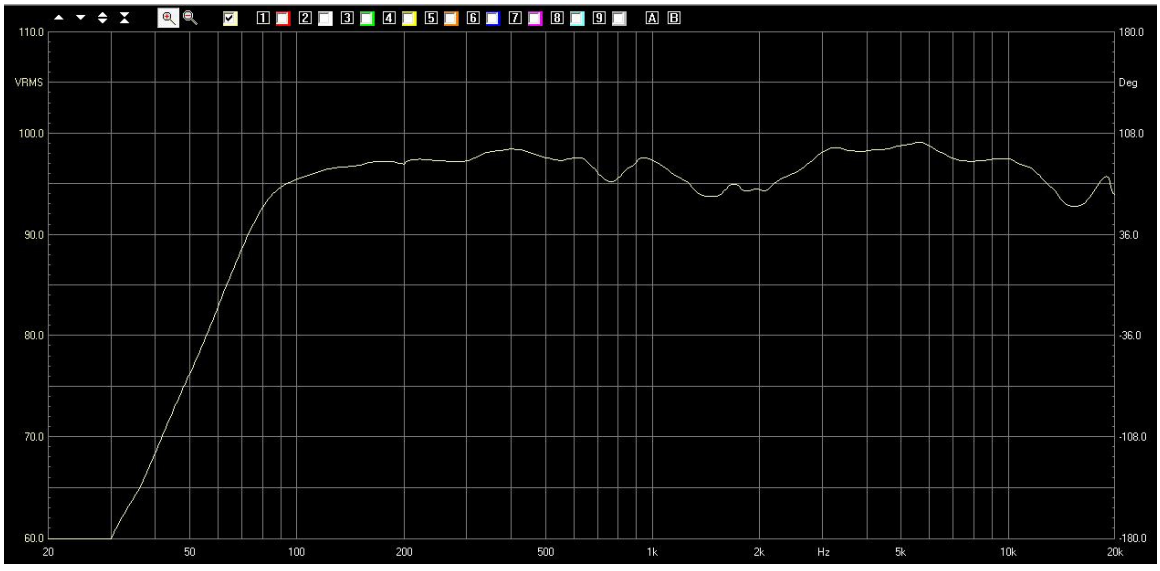
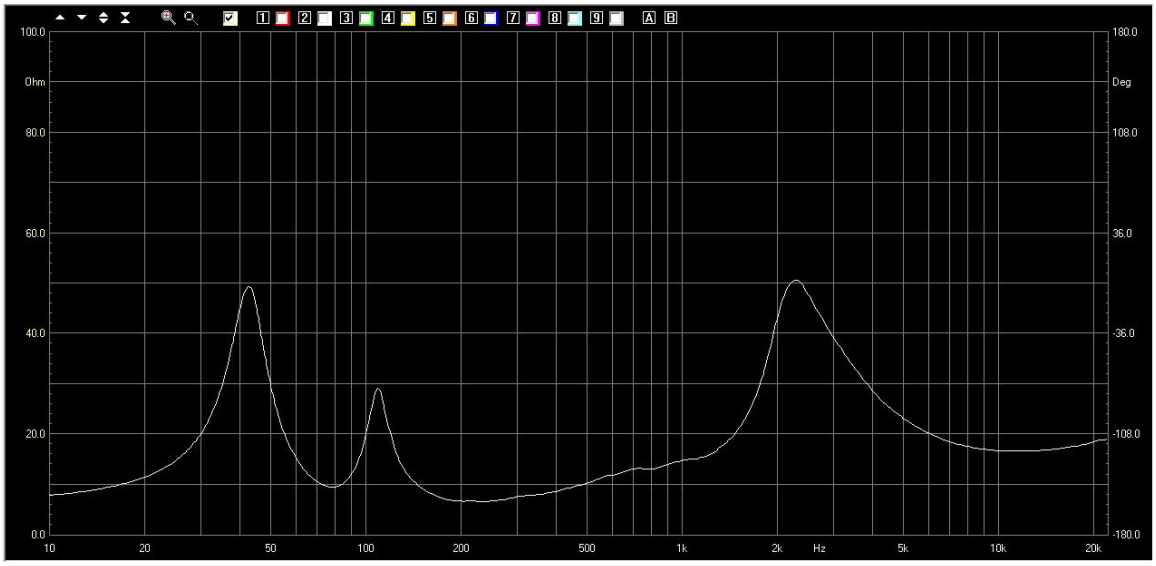
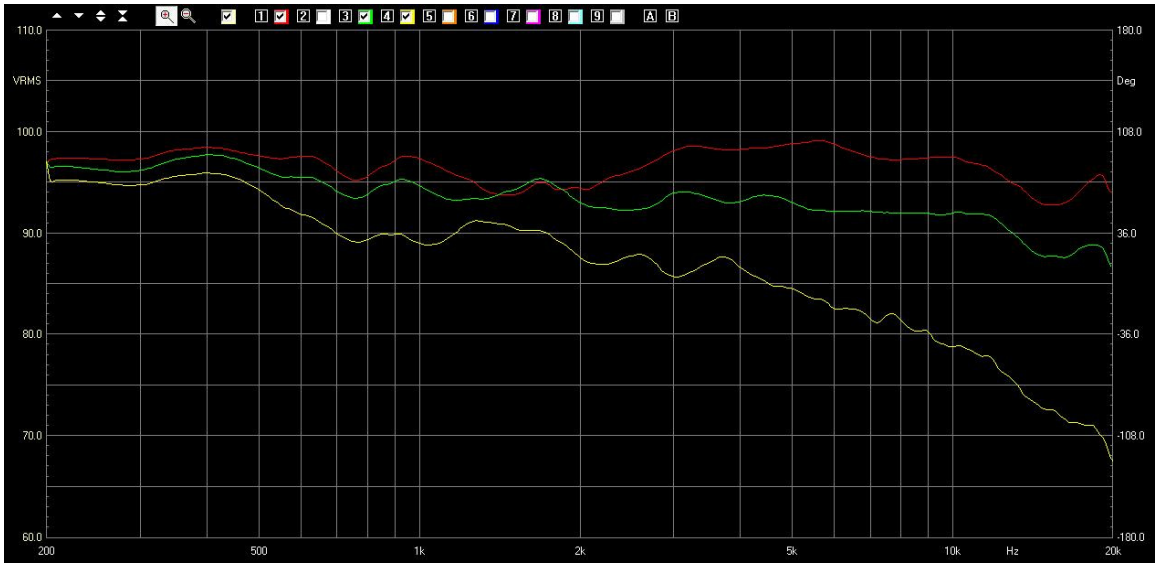
Measured Data



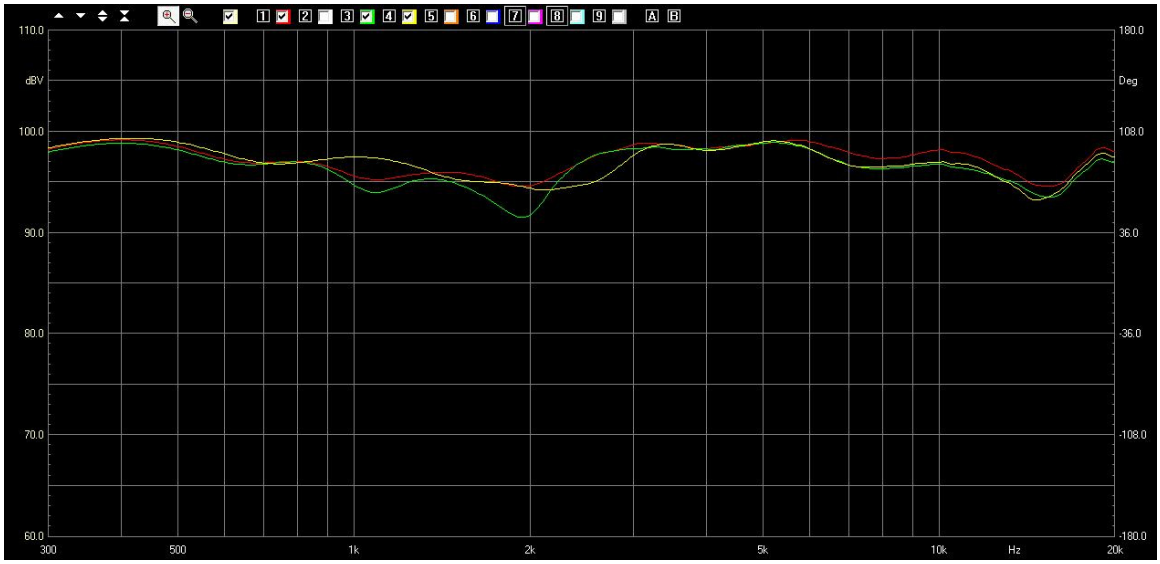
On-Axis Frequency Response (2m measurement normalized to 2.83V/1m)



Input Impedance



Horizontal Dispersion: on-axis(red), 30deg(green), 60deg(yellow)
(2m measurements normalized to 2.83V/1m)



Vertical Dispersion: on-axis(red), +10deg(green), -10deg(yellow)
(1m measurements normalized to 2.83V)

Directivity: -6dB beamwidth

Frequency/Hz	500	800	1k	2k	5k	8k	10k	15k
Beamwidth (deg)	180	120	100	110	60	66	66	70

Specifications:

Format: 2-way system
Drivers: TF1020, CDX1-1445 (H1-7050)
Sensitivity: 97.0dB (2.83V/1m)
Input Impedance: 8ohms (nominal), 6.5 ohms (minimum)
System Rated Power: 250W (EIA), 1000W (peak)
LF Extension: 85Hz (-3dB), 67Hz(-10dB)
Crossover Frequency: 2.1kHz
Maximum Output Level: 121dB (Continuous), 127dB (peak)
LF Unit Power Rating: 150W (AES)
Horn Directivity: 70deg H x 50deg V
High Pass Filter: 75-85Hz
Internal Volume: 28L
Port Tuning Frequency: 80Hz
Port Dimensions: 2 x (Diameter 75mm x Length 40mm)
Port Options: smaller port: 2 x (70Dx30L) / larger port: 2 x (80Dx51L)
Overall Dimensions: 560 x 336 x 275mm (H x W x D)

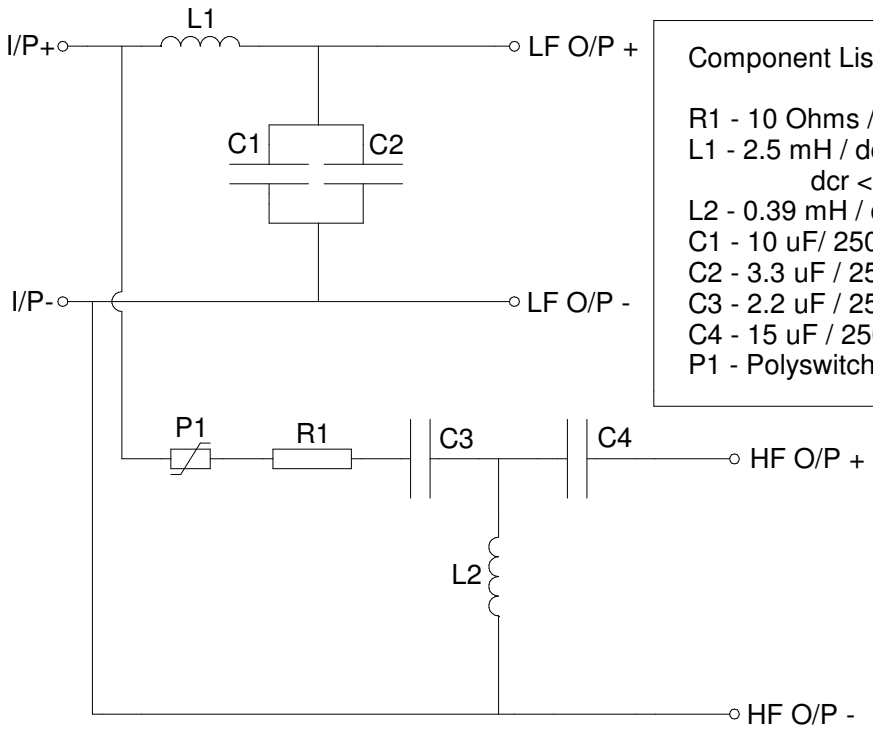
Crossover Network

The crossover schematic and component listing is shown below, along with a suggested component layout. The network provides a second order roll off for the bass unit and third order for the compression driver. This results in a fourth order acoustic crossover between the units.

L1 can be either an iron (solid) core or air cored inductor. For an iron core the saturation current needs to be at least 6A and/or it should have a power rating of at least 150W. It can be an air core provided that the d.c resistance is less than 0.5 ohms. The capacitors should be polypropylene types for best performance. If the poly-switch is included it should be situated at least 30mm or so away from R1 and L1 to avoid its local ambient temperature being raised by those components if and when they get warm.

Inductors should, in general, be positioned with their core axes at right angles and with at least 20mm of physical space between them to avoid magnetic interactions. However, they can be positioned with their axes parallel provided they are at the same height and there is sufficient separation between them. This separation will depend on the inductor size, core type and winding geometry but an axis separation of 125mm should prevent any significant interactions between typical inductors.

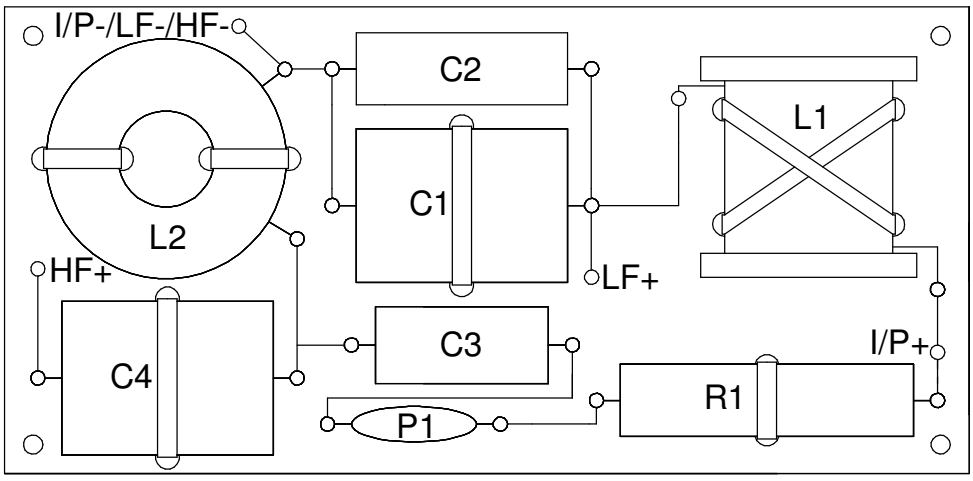
The crossover components can be mounted onto a 6mm wooden board, hard-wired and secured with hot-melt and then with cable ties fitted through holes drilled through the board. The board can be screwed onto the inner surface of the cabinet, ideally with 6mm spacers to prevent rattling. Cables should be connected in a way that does not stress the component lead-out wires, tag panels or terminal strips can be used to connect the lead-wires to the circuit. The cable conductor cross-sectional areas should be at least 1.5 square mm.



Component Listing - CX-TF1020

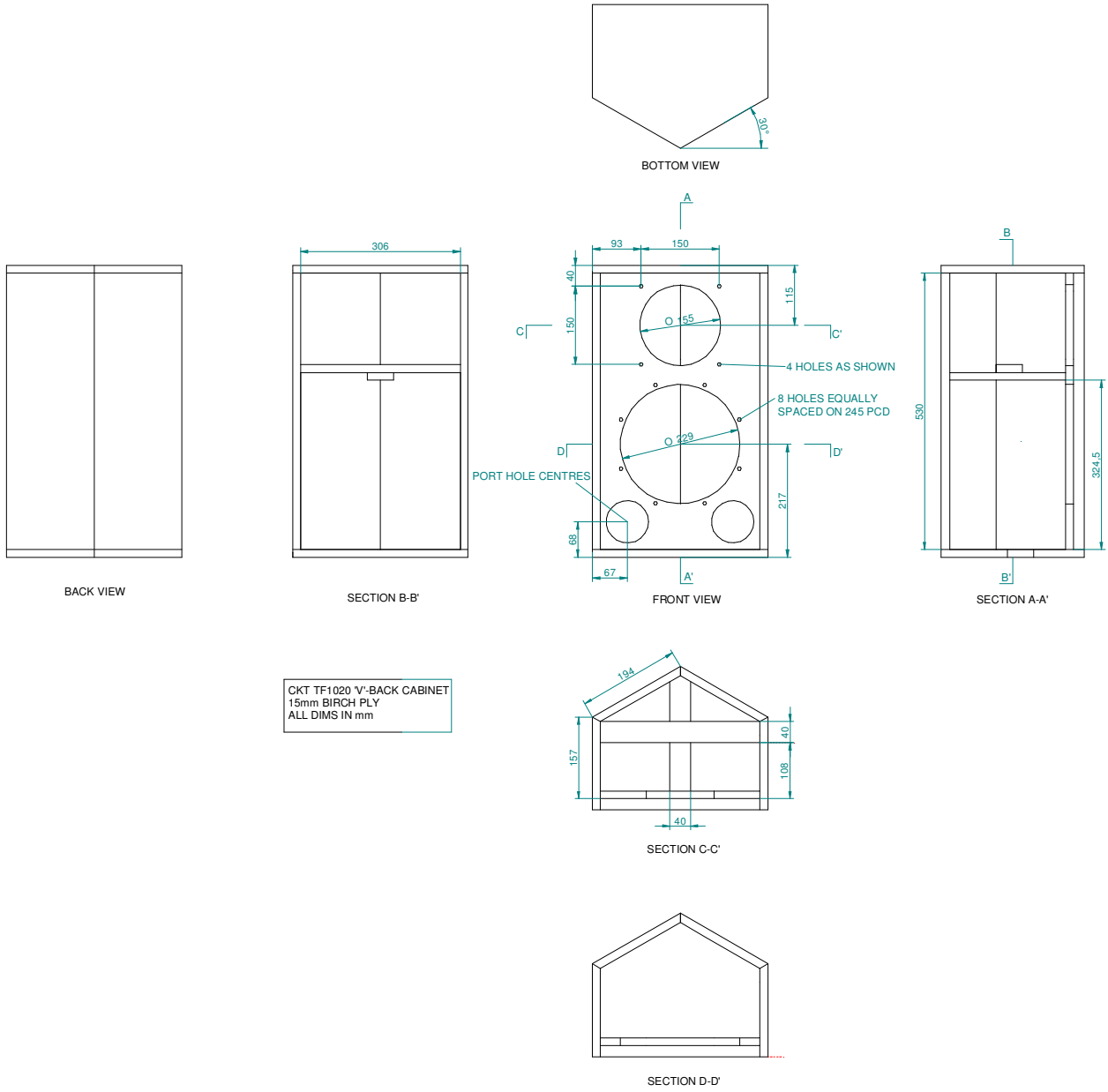
R1 - 10 Ohms / 20W
L1 - 2.5 mH / dcr < 0.3 Ohms (Iron Core)
dcr < 0.5 Ohms (Air Core)
L2 - 0.39 mH / dcr< 0.5 Ohms (Air Core)
C1 - 10 uF/ 250V / DF <0.1%
C2 - 3.3 uF / 250V / DF <0.1%
C3 - 2.2 uF / 250V / DF <0.1%
C4 - 15 uF / 250V
P1 - Polyswitch (optional) / 1.1A(H) / 2.2A(T)

Crossover Schematic: CX-TF1020



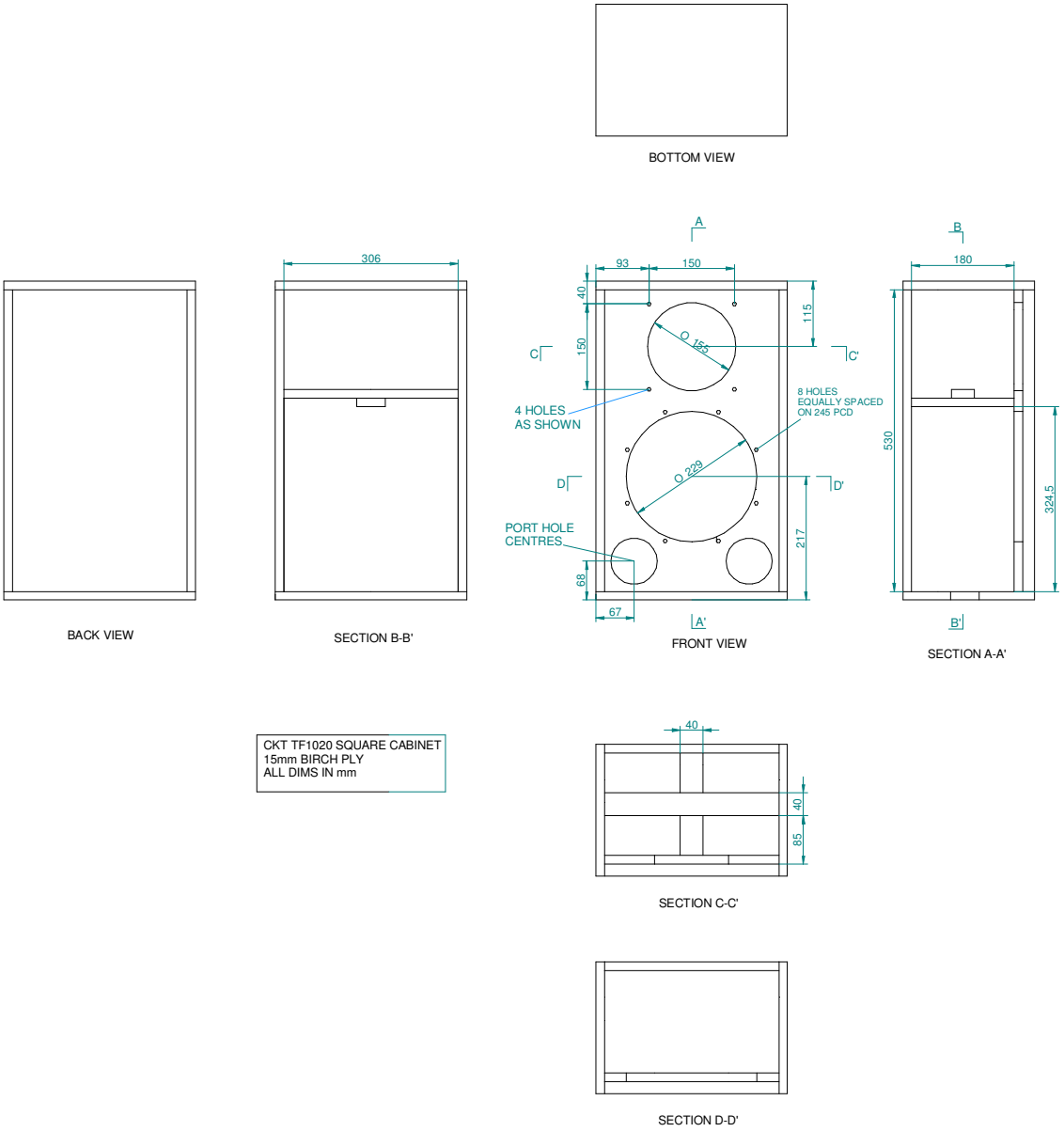
Suggested crossover component layout (Iron core L1)

Cabinet Design – ‘V’-backed



Construction Notes:
All joints should be glued and screwed.
T-Nuts and fixing bolts are recommended as a means of fixing the units.
Ensure that there are no air leaks in the cabinet apart from the ports – foam gasket strip to be used in the mounting of drivers, stand attachment (top-hat) and terminal panel.
Internal cables should be carefully positioned to avoid any rattling.
18mm MDF can be used instead of 15mm Birch plywood provided the internal volume is maintained.

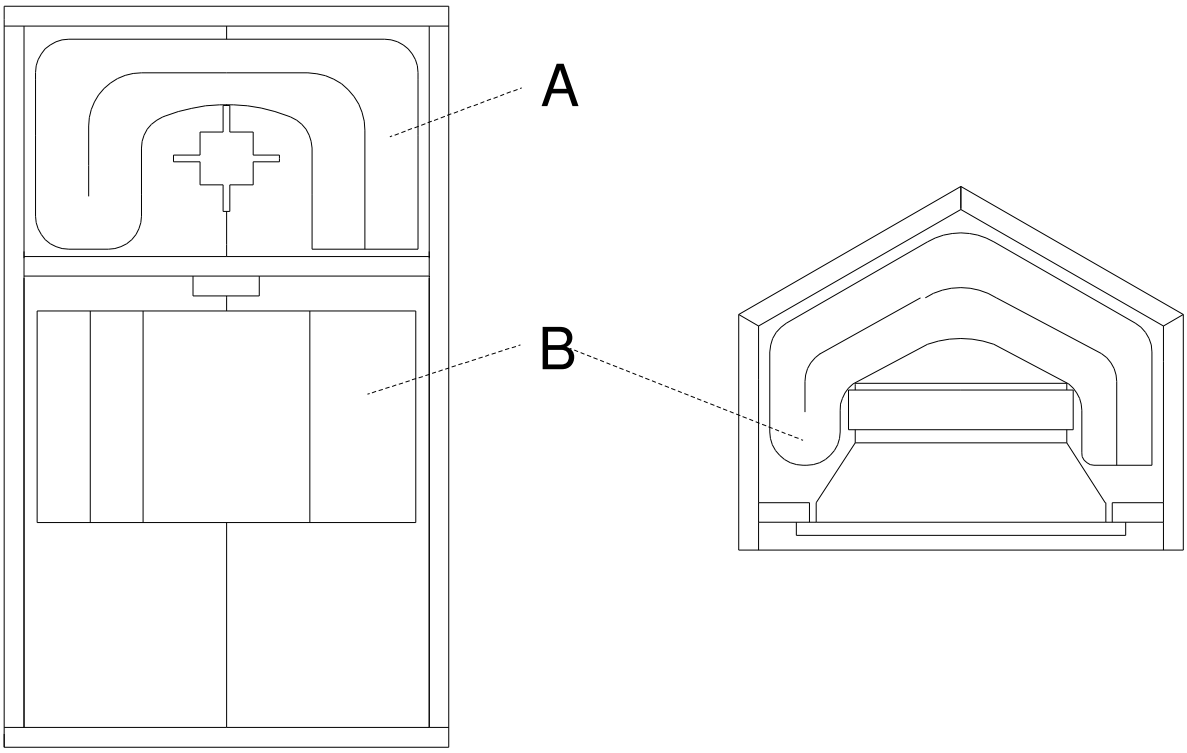
Cabinet Design – Square box



Construction Notes:
All joints should be glued and screwed.
Internally mounted battens can be used as a means of securing the front and back panels.
T-Nuts and fixing bolts are recommended as a means of fixing the units.
Ensure that there are no air leaks in the cabinet apart from the ports – foam gasket strip to be used in the mounting of drivers, stand attachment (top-hat) and terminal panel.
Internal cables should be carefully positioned to avoid any rattling.
18mm MDF can be used instead of 15mm Birch plywood provided the internal volume is maintained.

Arrangement of acoustic damping material within the cabinet

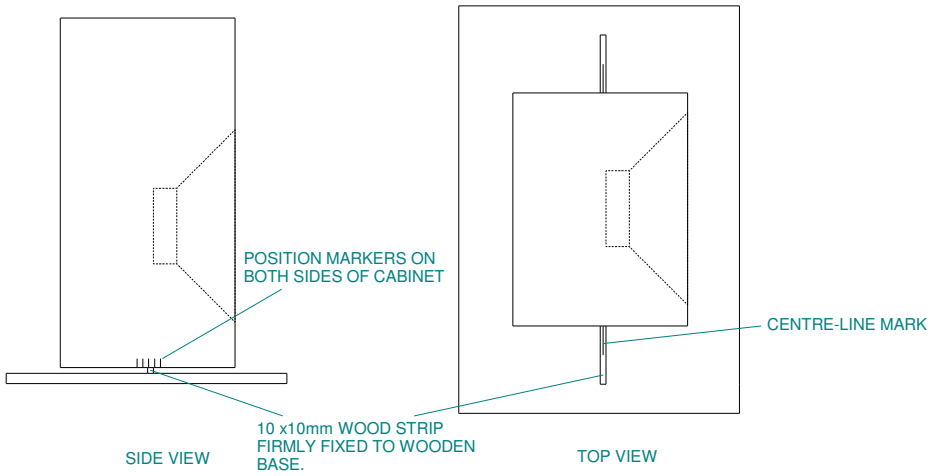
The damping material should be 50mm thick acoustic wadding. Piece A is folded double and looped over the compression driver horn. Piece B is folded double and placed behind the bass unit. Care should be taken that the material is not allowed to touch the cone of the bass unit or obstruct the ports. A=160x800mm, B=160x800mm



Methods for determining the balance point of the cabinet

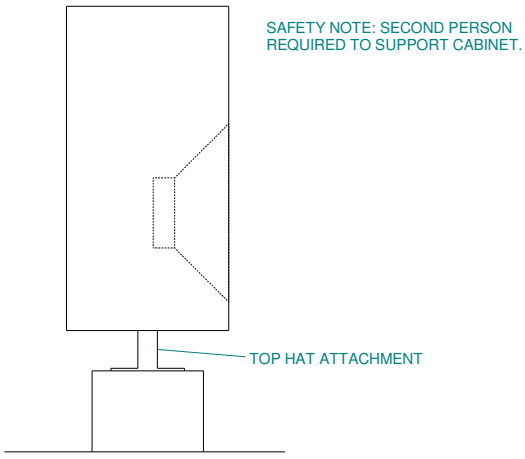
Before deciding on the exact position of the top hat stand attachment, it is first necessary to determine the balance point of the cabinet. Below are two methods that can be used for this purpose. It is important that this process is performed on the assembled cabinet. If it is desired that the cabinet should have a controlled forward lean, then the top hat should be positioned 30mm towards the rear of the cabinet from the balance point (assuming a 35mm stand pole diameter).

Method 1:
In this method the cabinet is balanced on a wooden strip of 10x10mm cross-section which runs in the side to side direction. Position markers should be drawn on both sides of the cabinet to ensure the cabinet is always precisely aligned in the forward direction. Carefully move the cabinet forwards and backwards to determine the front-to-back balance point. If the cabinet is asymmetrical along its width, then this process should be repeated at 90 degrees to determine the left to right balance point.



DETERMINING CABINET BALANCE POINT - METHOD 1

Method 2:
Safety note – this method requires two people, one to support the cabinet and the other to mark the balance point.
The cabinet is carefully placed on top of an inverted top-hat attachment. Move the cabinet relative to the top-hat until the optimum balance point is found. The position of the top hat on the bottom of the cabinet can then be marked.



DETERMINING CABINET BALANCE POINT - METHOD 2