CKT-TF1525e System

The CKT-TF1525e system is a high performance 2-way speaker design suitable for stand mounting. This system comprises the TF1525e 15”(380mm) bass/midrange driver and CDX1-1747 compression driver fitted with the H1-9040 horn. The system offers wide bandwidth, high sensitivity and high output capability and can be used either stand-alone or with a sub-woofer. The 90x40 horn ensures good coverage over a wide area.

Components				
System	Bass Driver	Compression Driver	Horn	Crossover
CKT-TF1525e	TF1525e	CDX1-1747	H1-9040	CX-TF1525e

CELESTION

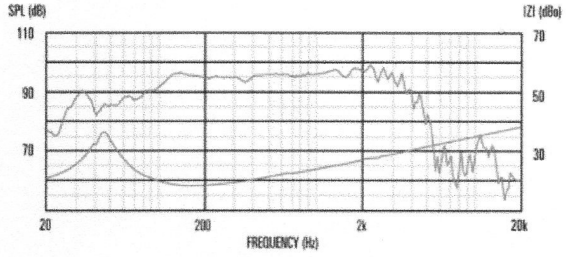
LF Pressed Chassis / Ferrite

TF1525e

Features

- 15" driver provides extended low frequency range
- 2.5" edgewound voice coil enables 97dB efficiency and 300Wrms (AES standard) power handling
- Vented magnet assembly for enhanced cooling
- Kevlar-loaded cone with sealed surround and damping for reduced distortion
- Suitable for use in 2-way and 3-way systems

8 Ω Frequency Response



Measured - 1W @ 1m, 2π

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. Measured on axis at 1W, 1m in 2 anechoic environment.
3. Xmax derived from: (voice coil winding width-gap depth)/2.

General Specifications

Nominal diameter	381mm/15in
Power rating [1]	300Wrms
Nominal impedance	4 Ω
Sensitivity [2]	97dB
Frequency range	45-3500Hz
Voice coil diameter	64mm/2.5in
Chassis type	Pressed steel
Magnet type	Ferrite
Magnet weight	1.4kg/50oz
Coil material	Edgewound copper
Former material	Glass fibre
Cone material	Kevlar loaded paper
Surround material	Cloth-sealed
Suspension	Single
Xmax [3]	3.5mm/0.14in
Gap depth	8mm/0.31in
Voice coil winding width	14.5mm/0.57in

Small Signal Parameters

D	0.33m/12.99in
Fs	49.8Hz
Mms	82.41g/2.91oz
Qms	7.12
Qes	0.53
Mmd	68.26g/2.41oz
Qts	0.50
Re	6.48Ω
Vas	128.19lt/4.53ft3
Bl	17.69Tm
Cms	0.12mm/N
Rms	3.62kg/s
Le (at 1kHz)	1.32mH

Mounting Information

Overall diameter	385mm/15.16in
Overall depth	163mm/6.42in
Cut-out diameter	352mm/13.86in
Mounting slot dimensions	9.2mm x 6.2mm/0.36in x 0.24in
Number of mounting slots	8
Mounting PCD range	369mm/14.56in
Unit weight	4.8kg/10.6lb

Packed Dimensions & Weight

Single pack size W x D x H	410mm x 410mm x 180mm /16.1in x 16.1in x 7.1in
Single pack weight	5.5kg/12.1lb
Multi pack size W x D x H	1200mmx1000mmx980mm /47.2in x 39.4in x 38.6in
Multi pack weight	248kg/547lb

CELESTION

Celestion, Claydon Business Park, Great Blakenham, Ipswich, IP6 0NL United Kingdom

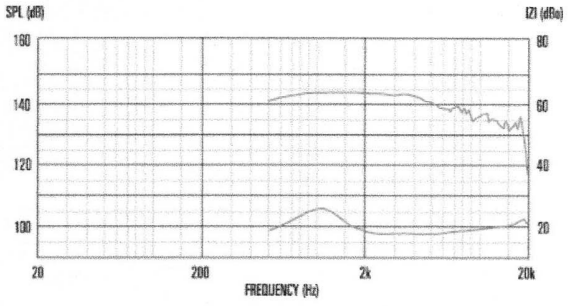
CELESTION

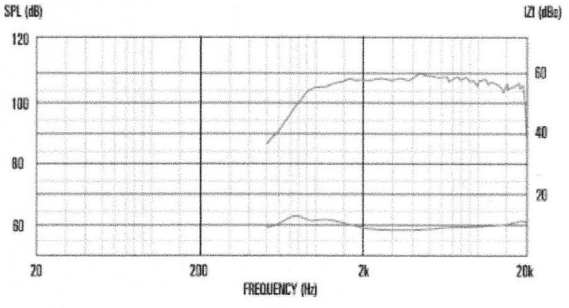
Compression Drivers / Ferrite

CDX1-1747

- 1" exit, ferrite magnet compression driver with 1.75" edgewound copper clad aluminium voice coil
- 60Wrms power handling (AES standard) and 110dB sensitivity
- Next generation Sound Castle™ soft clamping assembly reduces diaphragm stress for reduced distortion and even greater reliability of performance
- One piece Polyimide diaphragm and surround
- Finite Element Analysis (FEA) used to optimise both magnet assembly and acoustic design

8 Ω Frequency Response





1. Tested for two hours on plane wave tube using a continuous, band-limited pink noise signal 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]	60Wrms
Continuous power rating [2]	120W
Nominal impedance	8
Frequency range	1000-20,000Hz
Sensitivity [3]	110dB
Recommended min. crossover (12dB/oct)	2000Hz 12dB/oct
Voice coil diameter	44mm/1.75in
Voice coil material	Edgewound Copper Clad Aluminium
Magnet type	Ferrite
Diaphragm material	Polyimide
Surround material	Polyimide

Mounting Information

Width	120mm/4.72in
Depth	53mm/2.08in
Weight	2.3kg/5.1lb
Fitting	Flange (2 /3 M6 holes on 76/57.2, 3.0/2.224in PCD)
Throat exit	25.4mm/1.0in

Packed Dimensions & Weight

Single pack size W x D x H	140mm x 170mm x 70mm /5.5in x 6.7in x 2.8in
Single pack weight	3kg/6.6lb
Multi pack size W x D x H	
Multi pack weight	

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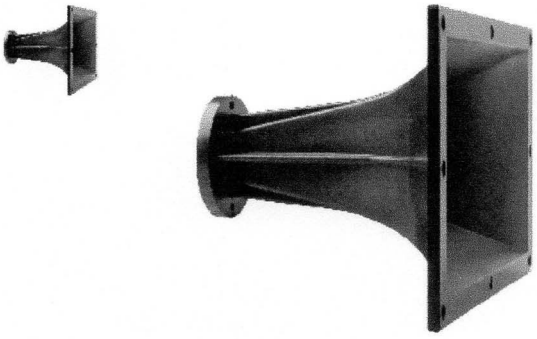
CELESTION

Horns

H1-9040P



- Lightweight horn flare with 1" throat exit• Compatible for use with bolt (flange) fitted compression drivers only• Exponential horn flare with 90 x 40 radiation pattern• 1.5kHz cut-off frequency• Hard-wearing reinforced polymer

General Specifications

Horn type	Exponential
Radiation pattern	90º x 40º
Horn material	Plastic
Baffle cut-out	165mm/9in x 260mm/14.2in
Driver mounting detail	2/3 M6 holes on 76/57mm, 3/2.2in PCD
Throat exit	25.4mm/1in
Height	199mm/7.8in
Width	318mm/12.5in
Depth	208mm/8.2in
Weight	0.66kg/1.45lb

Packed Dimensions & Weight

Single pack size W x D x H	350mm x 220mm x 230mm /13.7in x 4.7in x 4.7in
Single pack weight	1.0kg/3.3lb
Multi pack size W x D x H	650mm x 500mm x 240mm /25.6in x 20in x 9.4in
Multi pack weight	10kg/22lb

CELESTION

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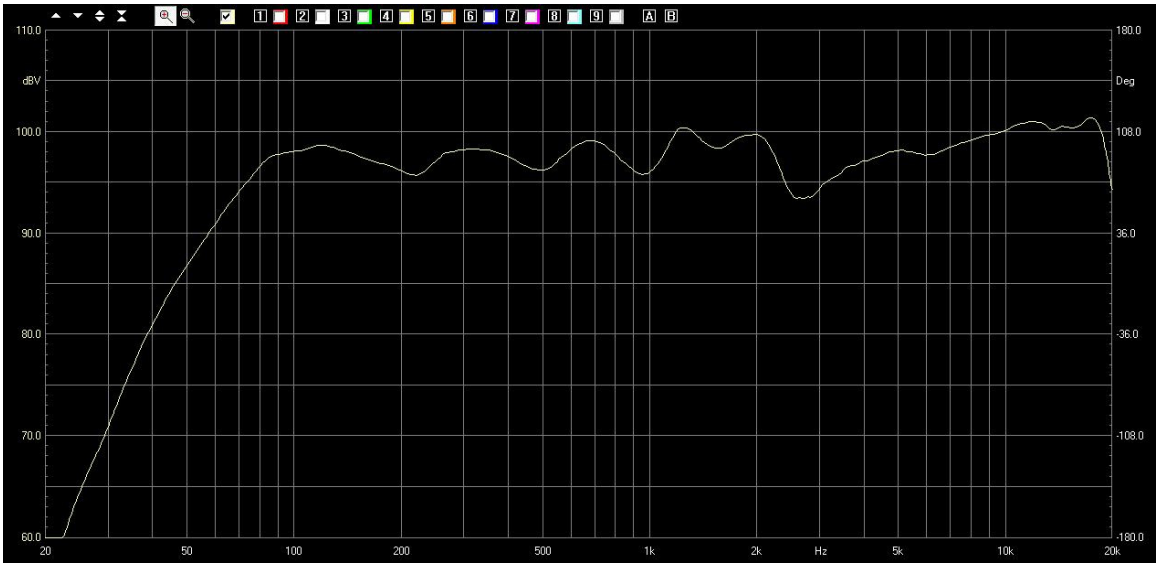
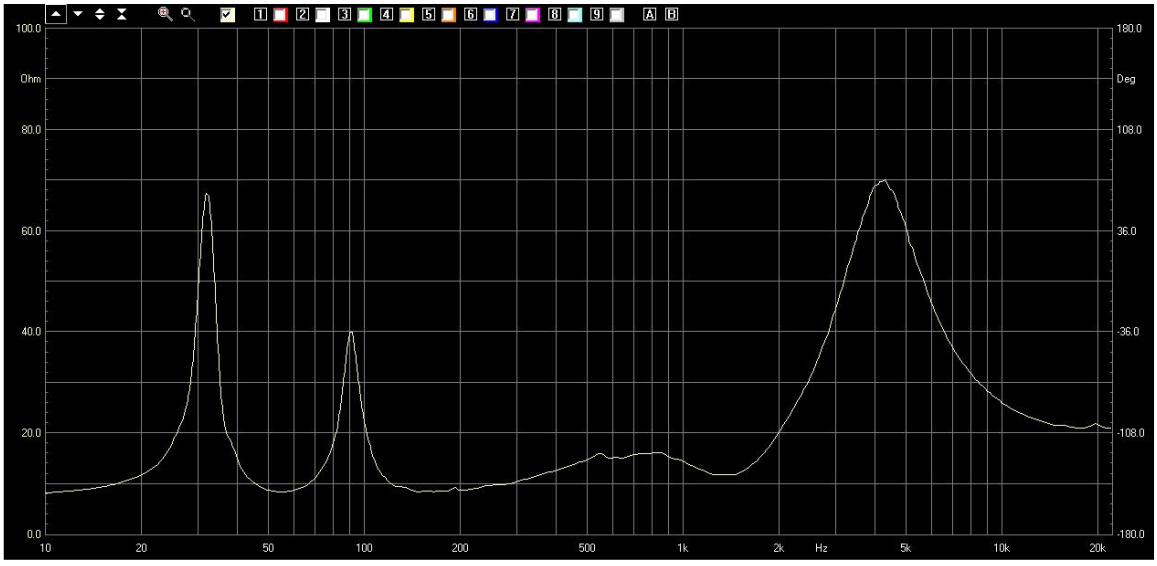
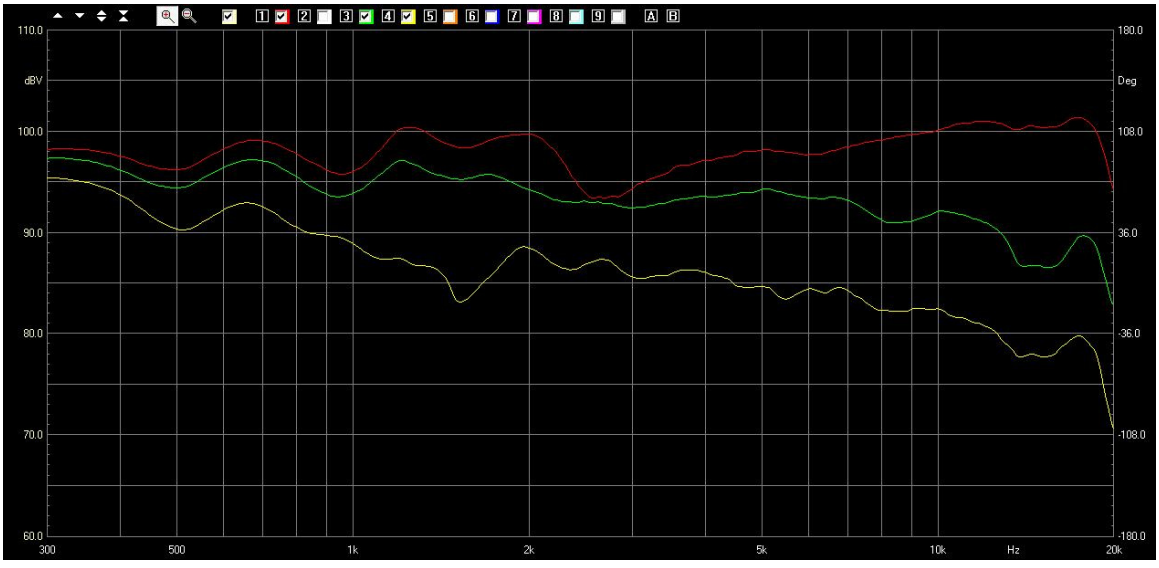
Measured Data



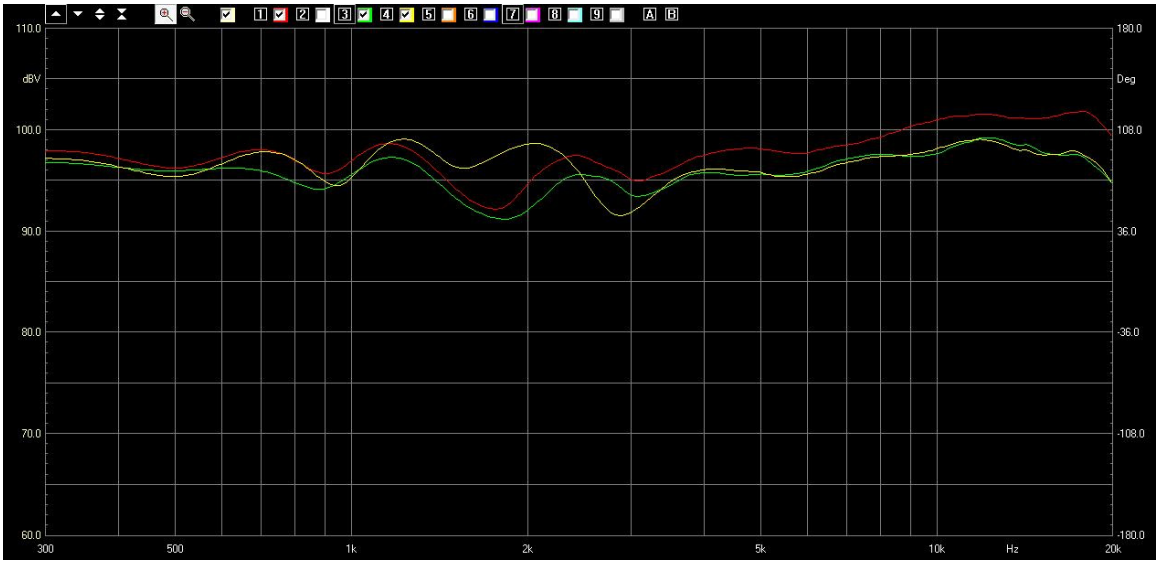
On-Axis Frequency Response (2m measurement normalized to 2.83V/1m)



Input Impedance



Horizontal Dispersion: on-axis(red), 30(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)	120	104	108	66	74	50	50	30

Specifications:

Format: 2-way system
Drivers: TF1525e, CDX1-1747 (H1-9040)
Sensitivity: 97.5dB (2.83V)
Input Impedance: 8ohms (nominal), 8.2 ohms (minimum)
Rated System Power: 450W (EIA), 1800W (peak)
LF Extension: 70Hz (-3dB), 50Hz(-10dB)
Crossover Frequency: 2.1 kHz
Maximum Output Level: 124dB (Continuous), 130dB (Peak)
LF Unit Power Rating: 300W (AES)
Horn Directivity: 90deg H x 40deg V
High Pass Filter: 60-70Hz
Internal Volume: 76L
Port Tuning Frequency: 55Hz
Port Dimensions: 2 x (Diameter 100mm x Length 60mm)
Port Options: smaller port: 2 x (95Dx49L) / larger port: 2 x (105Dx72L)
Dimensions: 730 x 452 x 342mm (H x W x D)

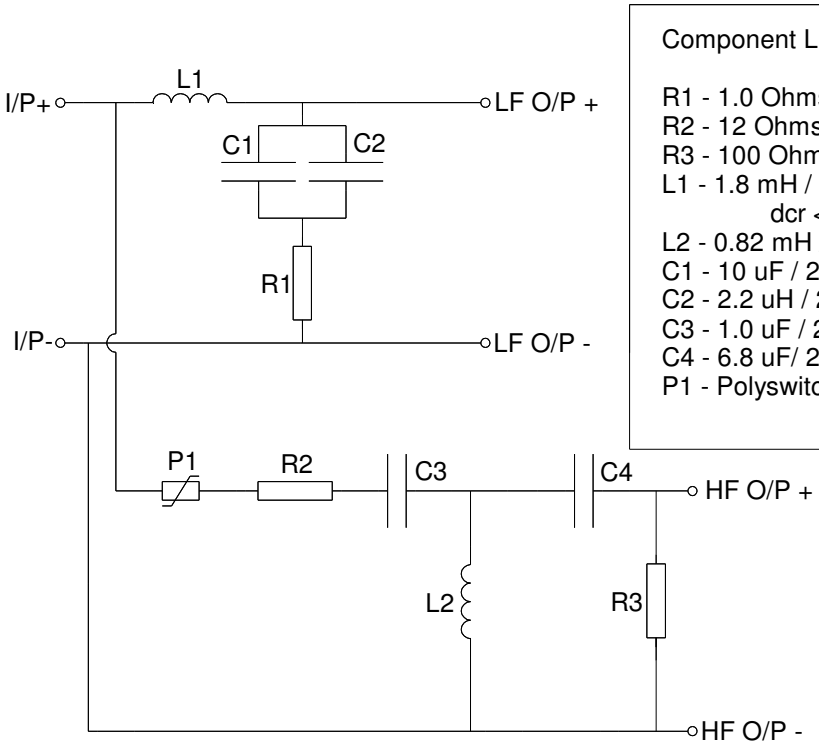
Crossover Network

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 air core or iron(solid) cored inductor. For an iron core the saturation current needs to be at least 8A and/or it should have a power rating of at least 250W. 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.

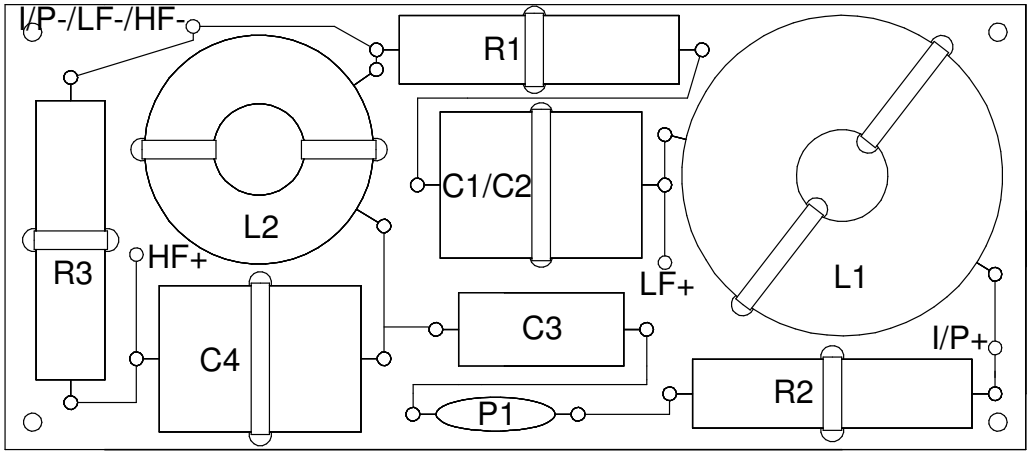
The crossover components can be mounted onto a 6mm wooden board, hard-wired and secured with hot-melt and then with cable ties fitted through holes drilled through the board. The board can be screwed onto the inner surface of the cabinet, ideally with 6mm spacers to prevent rattling. Cables should be 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-TF1525e

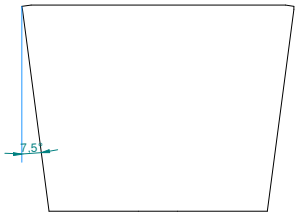
R1 - 1.0 Ohms / 20W
R2 - 12 Ohms / 20W
R3 - 100 Ohms / 10W
L1 - 1.8 mH / dcr < 0.5 Ohms (Air Core)
dcr < 0.25 Ohms (Iron Core)
L2 - 0.82 mH / dcr< 0.6 Ohms (Air Core)
C1 - 10 uF / 250V / DF<0.1%
C2 - 2.2 uH / 250V / DF<0.1%
C3 - 1.0 uF / 250V / DF<0.1%
C4 - 6.8 uF/ 250V/ DF<0.1%
P1 - Polyswitch (optional): 1.35A(H)/ 2.7A(T)

Crossover Schematic: CX-TF1525e

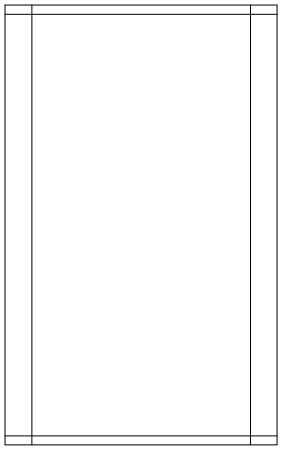


Suggested crossover component layout (Air core L1)

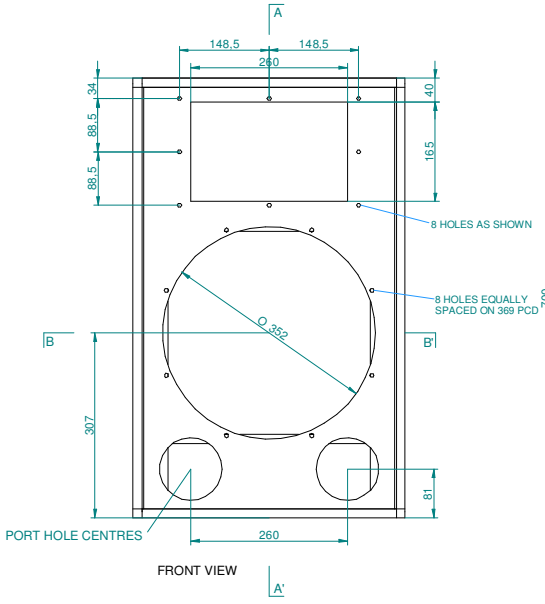
Cabinet Design – Tapered



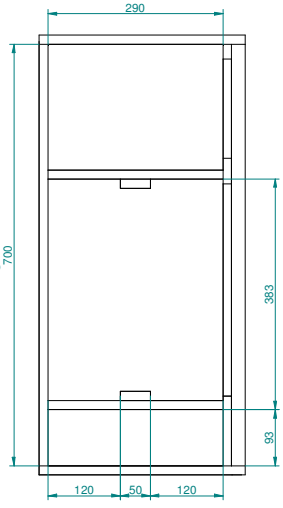
BOTTOM VIEW



BACK VIEW

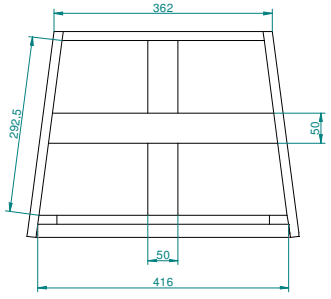


FRONT VIEW



SECTION A-A'

CKT-TF1525E TAPERED CABINET
15MM BIRCH PLY
ALL DIMS IN MM



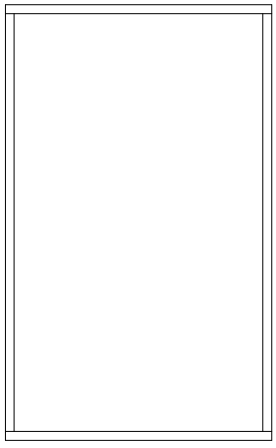
SECTION B-B'

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.

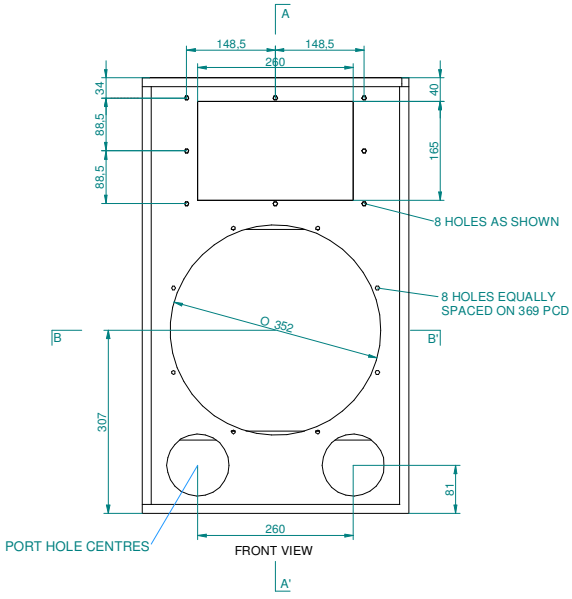
18mm MDF can be used instead of 15mm Birch plywood provided the internal volume is maintained.

Cabinet Design – Square box

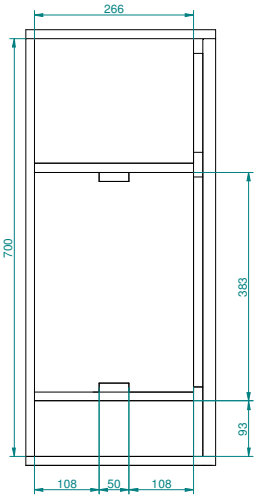
BOTTOM VIEW



BACK VIEW

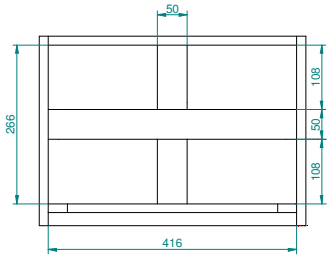


FRONT VIEW



SECTION A-A'

CKT-TF1525E SQUARE CABINET
15MM BIRCH PLY
ALL DIMS IN MM



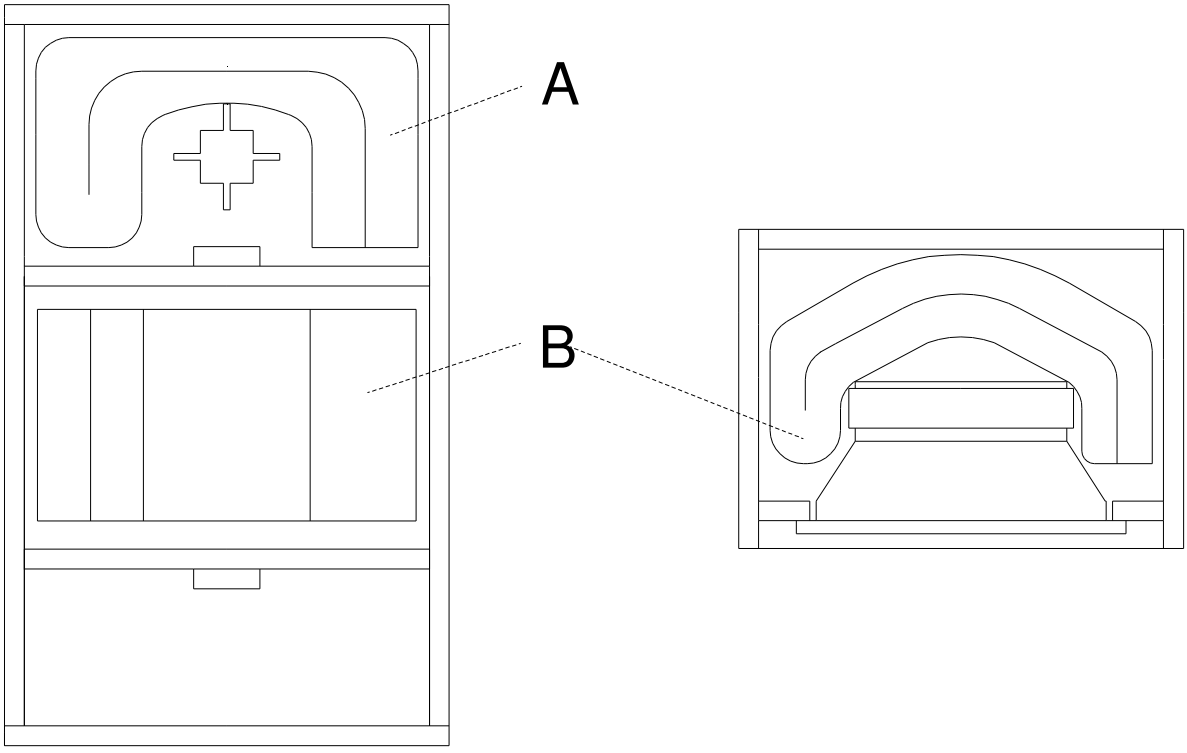
SECTION B-B'

Construction Notes:
All joints should be glued and screwed.
T-Nuts and fixing bolts are recommended as a means of fixing the units.
Internally mounted battens can be used as a means of securing the front and back panels.

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

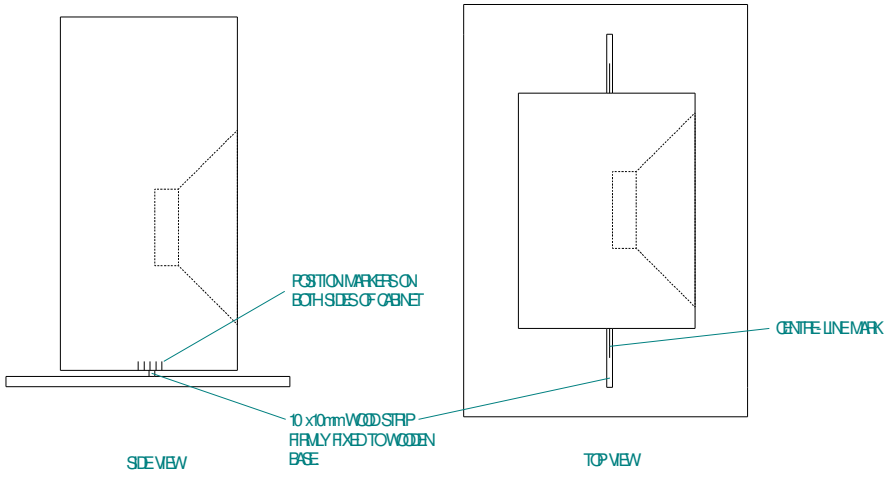
The damping material should be 50mm thick acoustic wadding. Piece A is folded double and looped over the compression driver horn. Piece B is folded double and placed behind the bass unit. Care should be taken that the material is not allowed to touch the cone of the bass unit or obstruct the ports. A=160x800mm, B=300x1000mm



Methods for determining the balance point of the cabinet

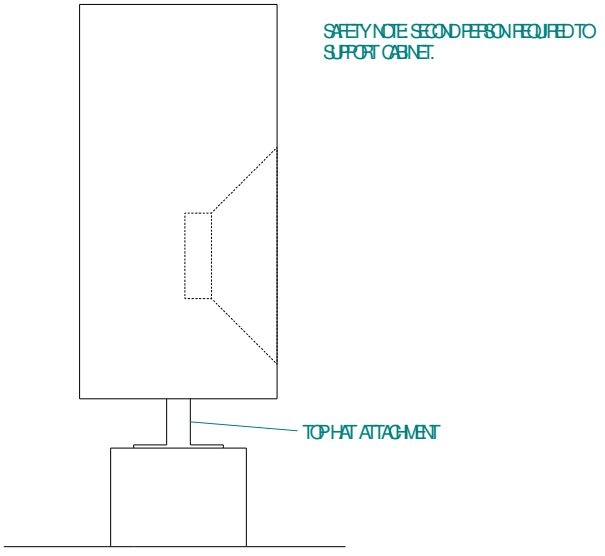
Before deciding on the exact position of the top hat stand attachment, it is first necessary to determine the balance point of the cabinet. Below are two methods that can be used for this purpose. It is important that this process is performed on the assembled cabinet. If it is desired that the cabinet 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