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**PD-2W12-3 - 12" BASS REFLEX, 2-WAY LOUDSPEAKER**

SUITABLE FOR USE WITH: **PD.123C001** | **PD.CD1N**

[WWW.PRECISION-DEVICES.COM](http://WWW.PRECISION-DEVICES.COM)

## ENCLOSURE CONSTRUCTION HINTS & TIPS

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### MATERIAL

We recommend the use of a multi-layer, void free, exterior grade birch ply. Thickness should be at least 18mm (3/4") and 24mm (1") for larger enclosures. Other kinds of wood (e.g. Pine, blackboard and hardwoods) may be used for construction, but the resulting strength and acoustic properties will be affected. As a cheaper option Medium Density Fibreboard (MDF) or flooring-grade chipboard can be used where the cabinet is to be permanently installed in a dry situation.

### METHOD / TECHNIQUE

We recommend lapped joints, however simple butt joints are adequate, both types of joint should be airtight. All joints should be bonded with a sufficient bead of glue to ensure good adhesion (PVA or PU glue is suitable) and screwed at 200mm (8") centres with 4.2mm or 4.8mm (No.8 or 10 gauge) x 60mm (2 3/8") screws. A high quality wood screw should be used. Make sure there's a clearance hole in the wood that the screw head bears down on, so the pieces of wood are pulled fully together. To curtail major resonances (e.g. spurious buzzing noises), major panels should be stiffened with battens; off-cuts are often used, however we recommend purpose made braces for optimum performance. These should be glued and screwed into place. The arrangement must be consistent (between like cabinets) to ensure performance remains the same. To reduce panel resonance further a larger number of smaller braces can be used.

### HOLE CUTTING

Fixing holes to mount the loudspeaker may be defined using the holes in the driver frame. The loudspeaker is then mounted using bolts and 'T' nuts supplied. All other holes for connectors, handles, etc should be cut before any other parts are mounted.

### PASSIVE CROSSOVERS

Unless otherwise stated, cabinet designs are passive units, and adequate external signal processing arrangements should be made to filter out signals.

Where used, crossover networks should be mounted for ease of access, but at the same time they should be kept away from the immediate vicinity of the driver(s)' magnets. Crossover PCBs need to be firmly secured; buzzing or rattling will impair sound quality. If a crossover breaks loose in transit, the crossover and/or drivers may be damaged. Self-tapping screws provide the suitable fixing, taking care to ensure a tight fit. Screw cups spread out the pressure exerted on the PCB, reducing the chances of damage if the cabinet is dropped from a height. Rubber grommets can be used to space the crossover PCB off the cabinet wall, and can protect the PCB/components from the resulting shock.

### CONNECTORS

Some connectors leak air. Be sure to check the connectors are suitable for the application intended.

### INTERNAL WIRING

Wiring should be clearly coded so correct polarity is visible. We recommend red and black for hot (+ve) and cold (-ve) respectively. When the enclosure is first tested, use a battery or polarity ('phase')-checker set to ensure that the driver(s)' cones move forwards (outwards) when the hot (+ve) input terminal is driven positive.

### ACOUSTIC TREATMENT

The inside of the enclosure should be lagged with an absorptive material, to dampen internal reflections and standing waves. Recommended materials are BAF or a similar cushion filler. For best results staple the wadding to the cabinet walls. The amount of wadding will affect the acoustic performance of the enclosure and is best adjusted to give the desired response. Plans will indicate where any wadding is best positioned.

### DRIVE UNITS

Before mounting the drive units, the internal wing, connectors (and passive crossovers where applicable) should be fitted. Make sure the cabinet interior is clear and free from swarf and waste. Drive units are fitted with a foam sealing strip to provide airtight conditions when bolted down. Make sure this is in place and intact before fixing the driver. The driver's fixing bolts should be tightened in stages, in a diagonal sequence to avoid possible deformation of the chassis or baffle.

Further information about our drive units can be found at <http://www.precision-devices.com>

## COMPONENTS & SPECIFICATIONS



### PD.123C001 BASS DRIVER

#### SPECIFICATIONS

Nominal Diameter	12" / 304.8 mm
Voice Coil Diameter	3.0" / 76 mm
Power Rating	400 W (A.E.S.)
Peak Power (6dB Crest Factor)	1600 W (A.E.S.)
Sensitivity (1w - 1m)	99 dB
Frequency Range	45 Hz - 4 kHz
Recommended Enclosure Vol.	35 - 55 Litres
Resonance	35 Hz
Voice Coil Winding Depth	21.00 mm / 0.83"
Magnet Gap Depth	11.0 mm / 0.43"
Flux Density	1.2 Tesla
Magnet Material	Y30 Ferrite
Voice Coil Material	Copper

#### THIELE SMALL PARAMETERS (8Ω MODEL)

Fs	35 Hz
Re	5.5 Ω
Qms	7.500
Qes	0.147
Qts	0.144
Le @ 1 kHz	2.170 mH
Le @ 10 kHz	0.910 mH
Vas	122 Litres
Mms	70.00 g
Sd	547 cm <sup>2</sup>
Cms	288.00 μm/N
BL	24.50 T/m
Xmax	7.5 mm
Vd	0.410 Litres
Ref. Efficiency	3.44%
EBP	238.10 Hz

#### MOUNTING INFORMATION

Chassis Shoulder Diameter	279 mm
Outer Bolt Circle	4x M6 on 318 mm PCD
Inner Bolt Circle	8x M6 on 293 mm PCD



### PD.CD1N COMPRESSION DRIVER

#### GENERAL SPECIFICATIONS

Sound Channel / Throat Size	1.0" / 25.4 mm
Voice Coil Diameter	1.73" / 44 mm
Power Rating (above 1kHz) <sup>1</sup>	40 W (A.E.S.)
Sensitivity (1W - 1m, on axis, on horn) <sup>2</sup>	109 dB
Frequency Range <sup>3</sup>	900 Hz - 19 kHz
Recommended Crossover Frequency (Filtered at 18 dB/ Octave)	1800 Hz
Minimum Impedance	2.6 kHz - 7.5 Ω
Voice Coil Material	Copper Clad Aluminium
Coil Former Material	Kapton
Flux Density	1.8 Tesla
Diaphragm Material	PEEK
Suspension Material	PEEK
Surround / Edge Termination	Flat
Phase Plug Design	Annular
Phase Plug Material	ABS
Magnet Material	Neodymium
Connector Type	Solder Tab

#### MOUNTING INFORMATION

Fitting	2x 6mm threaded holes
Mounting PCD	76 mm

**Important Note:** PD.CD1.N Requires the use of an adaptor plate to fit traditional horn P.C.D fixing dimensions. This is available from your local PD retailer.

- High Performance, 1x 12", Bass Reflex, 2-way Loudspeaker System.
- Neodymium Compression Driver.
- Suitable for Fane ELH-003 or XT-1086 Horn Components.

A wide range of speaker cabinet accessories are available from specialist suppliers. Wheels, grilles, corner protectors, paint, connectors and handles should be carefully fitted to avoid air leaks or weakening the enclosure.

Full driver specifications can be found at:  
<http://www.precision-devices.com>

## HORN COMPONENT SPECIFICATIONS

Constructors may choose between the Fane ELH-003 or XT1086 Horn components.

Other widely available horns with similar specifications may also function well but may require some modification to the baffle mounting cut-out.



### FANE ELH-003 HORN

#### GENERAL SPECIFICATIONS

Throat Diameter	1" / 25.4 mm
Nominal Coverage (-6dB)	80° x 60°
Cut-off Frequency	1000 Hz
Material	Glass Fibre Resin

#### MOUNTING INFORMATION

Overall Dimensions	240 x 180 mm
Baffle Cut-out	Minor Rad. 75 mm Major Rad. 104 mm
Depth	115.5 mm
Mounting Dimensions	x4 6mm holes 101 / 76 mm



### XT1086 HORN

#### GENERAL SPECIFICATIONS

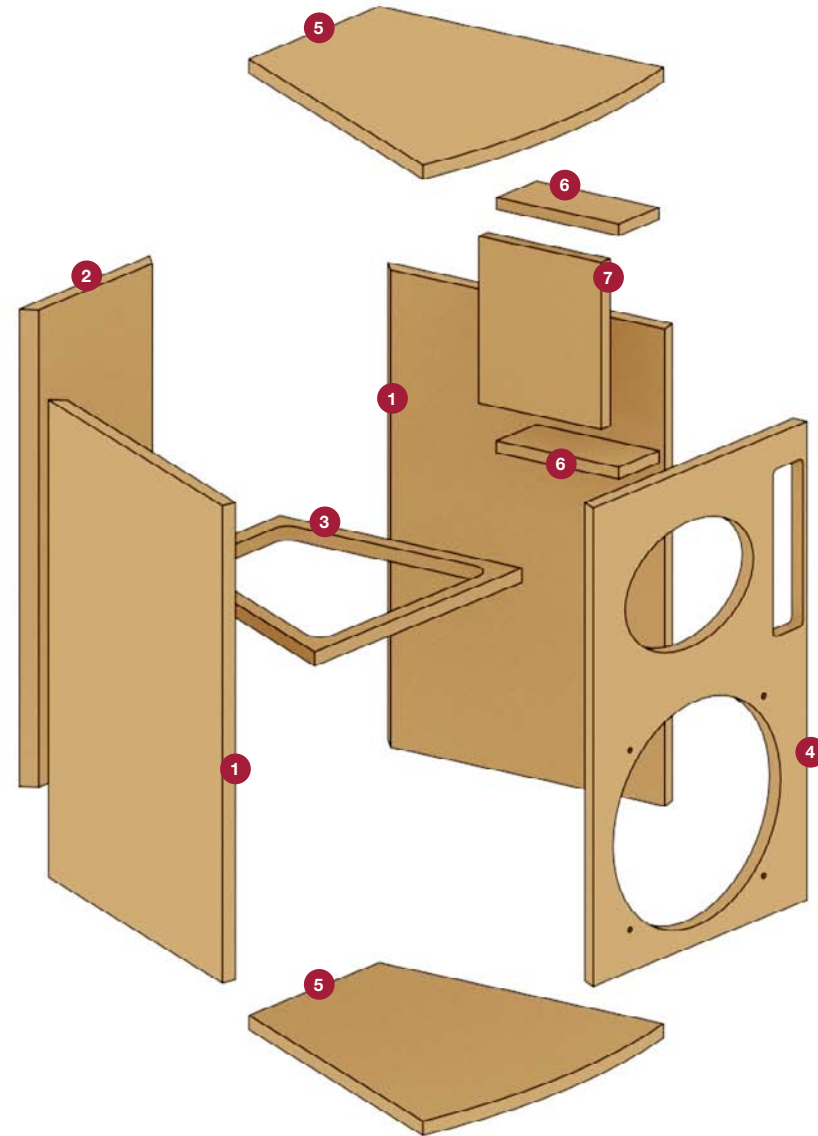
Throat Diameter	1" / 25.4 mm
Horizontal Coverage (-6dB)	80° (1--8) average range (1.6 kHz - 12.5 kHz)
Vertical Coverage (-6dB)	60° (18--7) average range (1.6 kHz - 12.5 kHz)
Directivity Index	10 dB (1.3 -- 0.4) average range (1.6 kHz - 12.5 kHz)
Usable Frequency Range	Above 800 Hz
Recommended Crossover Frequency	1200 Hz or more
Sensitivity	110 dB
Frequency Range	1200 Hz - 20 kHz
Material	Die-cast Aluminium

#### MOUNTING INFORMATION

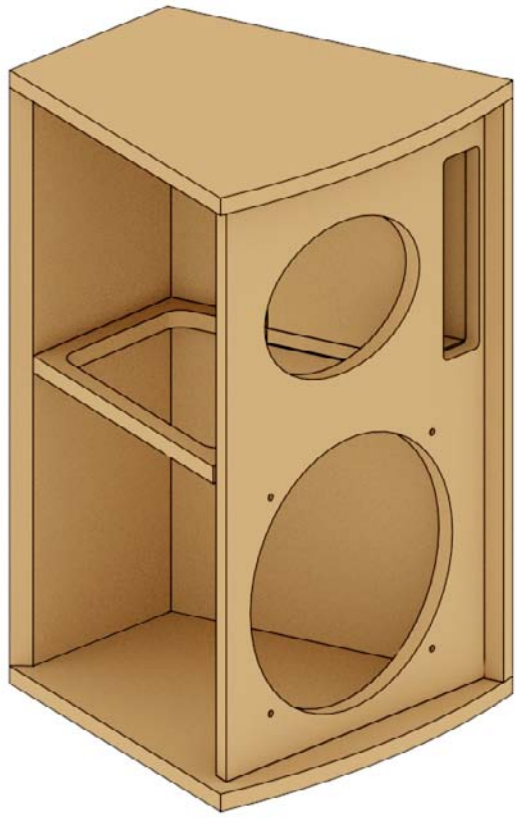
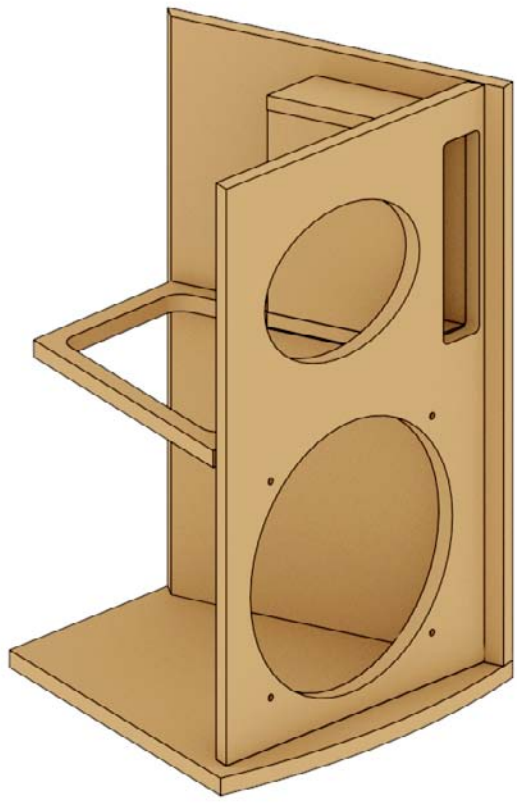
Mouth Height	215 mm / 8.5"
Mouth Width	260mm / 10.2"
Depth	126 mm / 5"
Mounting Dimensions	x4 M6 holes on edge of rectangle with 214mm x 169 mm sides.



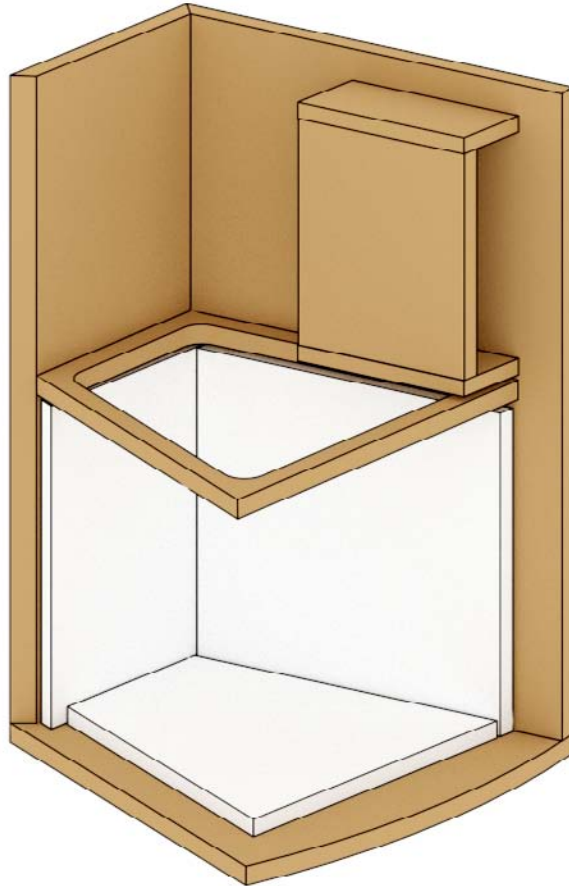
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NOTES:	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>5 OF 16</b>



PROJECT: <b>PD-2W12-3</b>	PART: <b>Parts Key</b>		
NOTES:	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR $\pm 0.4$ , HOLES $+0.1/-0.0$ , NONE - CUMULATIVE
			SHEET: <b>6 OF 16</b>

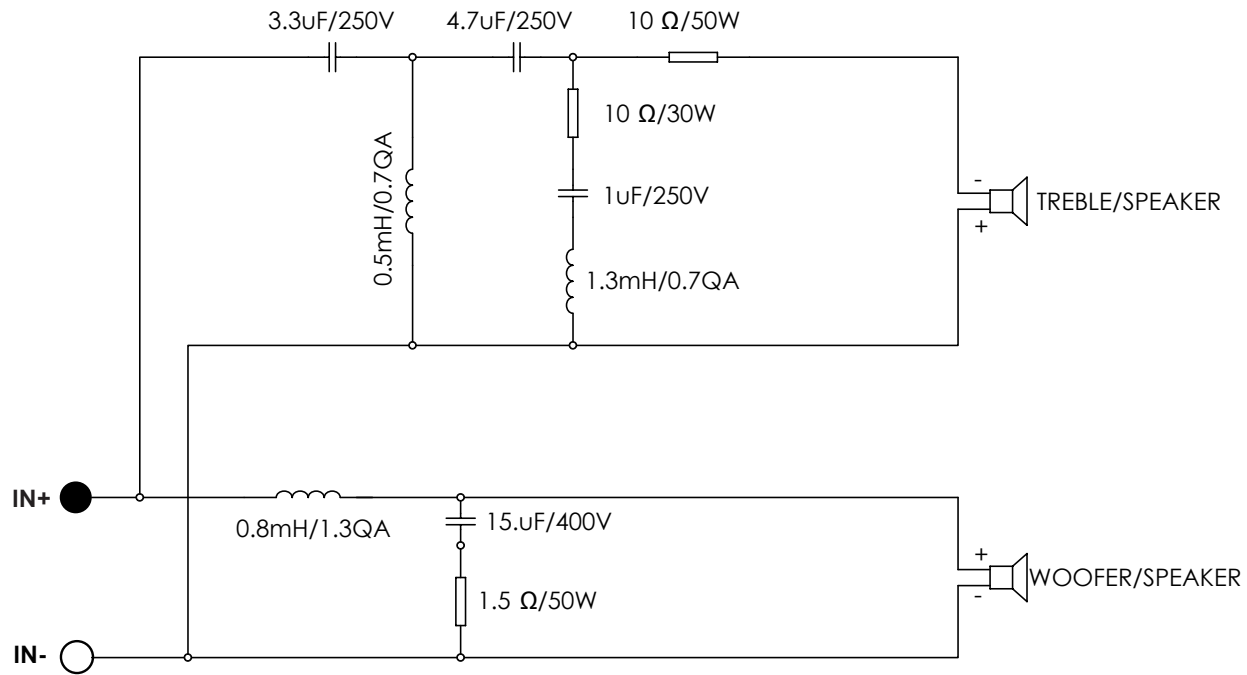


PROJECT: <b>PD-2W12-3</b>		PART: <b>Cabinet Construction Detail</b>		
NOTES:	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>7 OF 16</b>

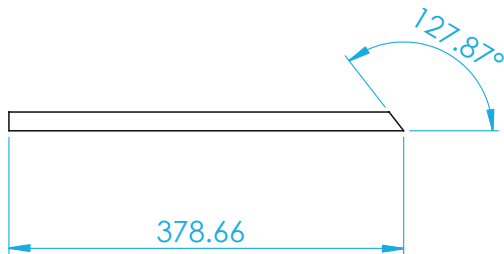
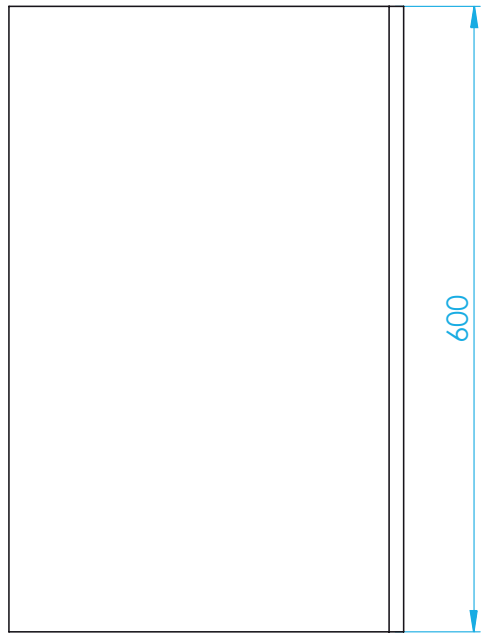


PROJECT: <b>PD-2W12-3</b>		PART: <b>Acoustic Wadding Placement</b>		
NOTES:	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>8 OF 16</b>

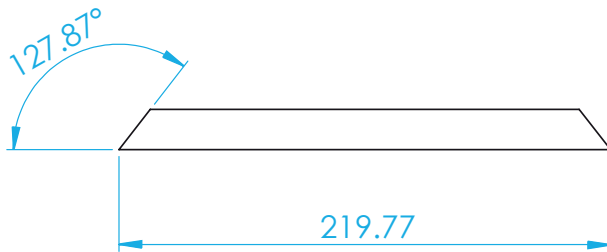
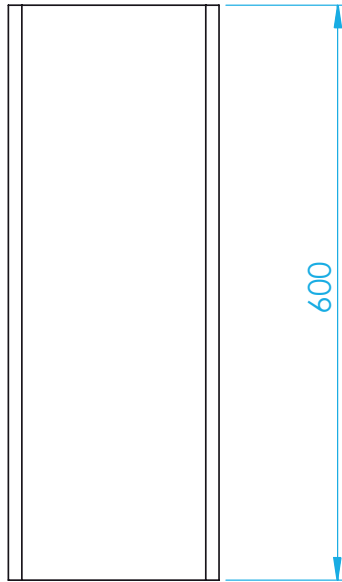




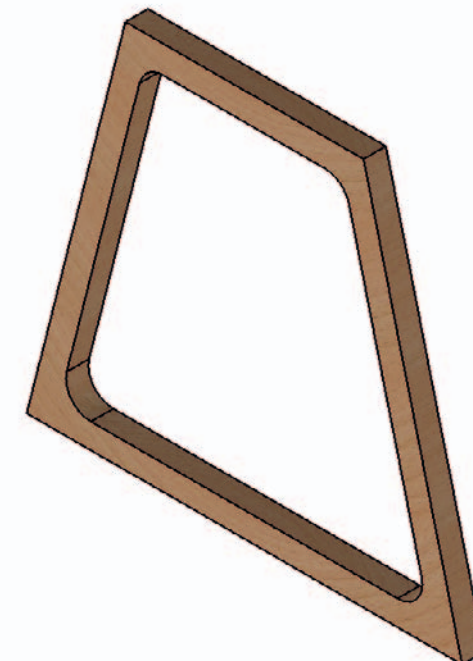
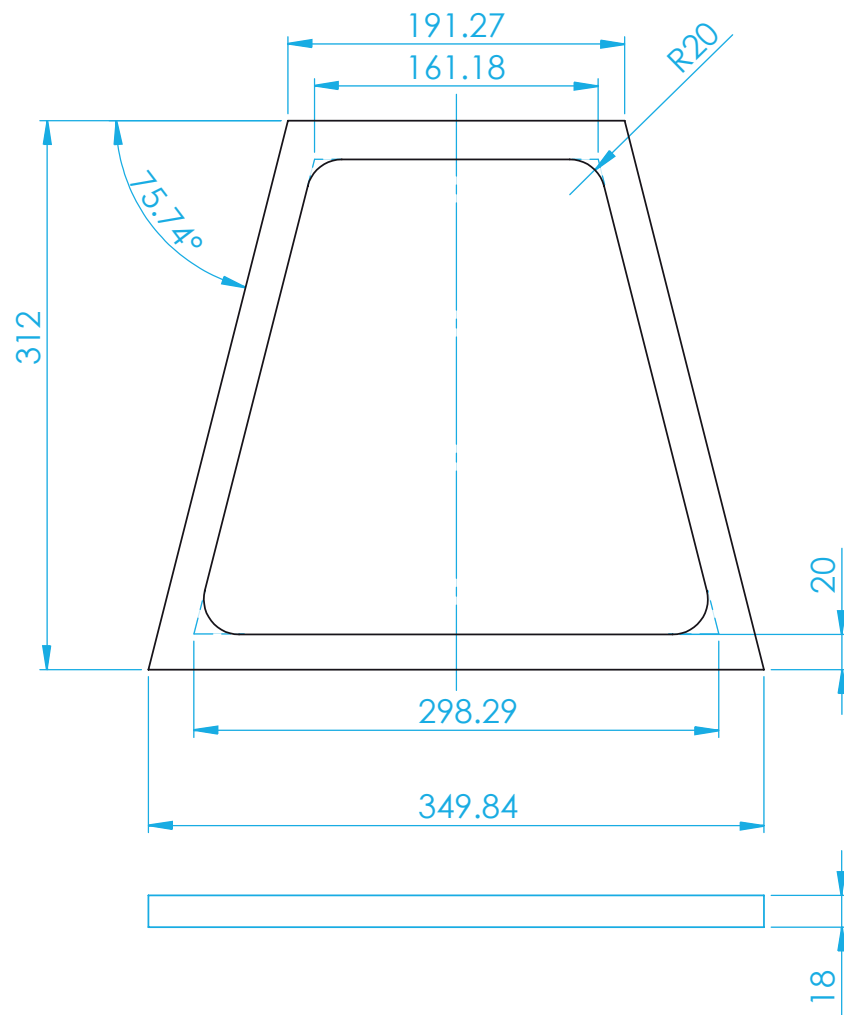
PROJECT: <b>PD-2W12-3</b>		PART: <b>Crossover Schematic</b>		
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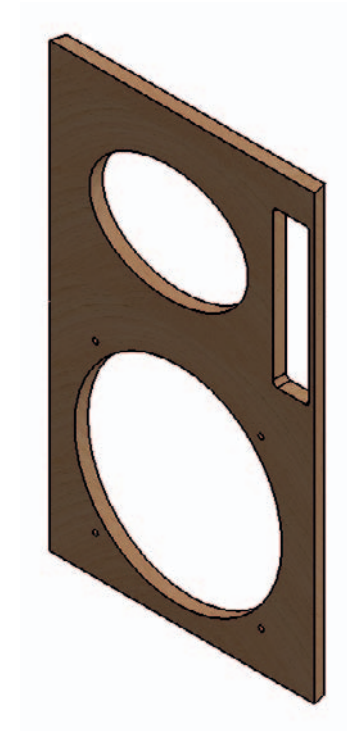
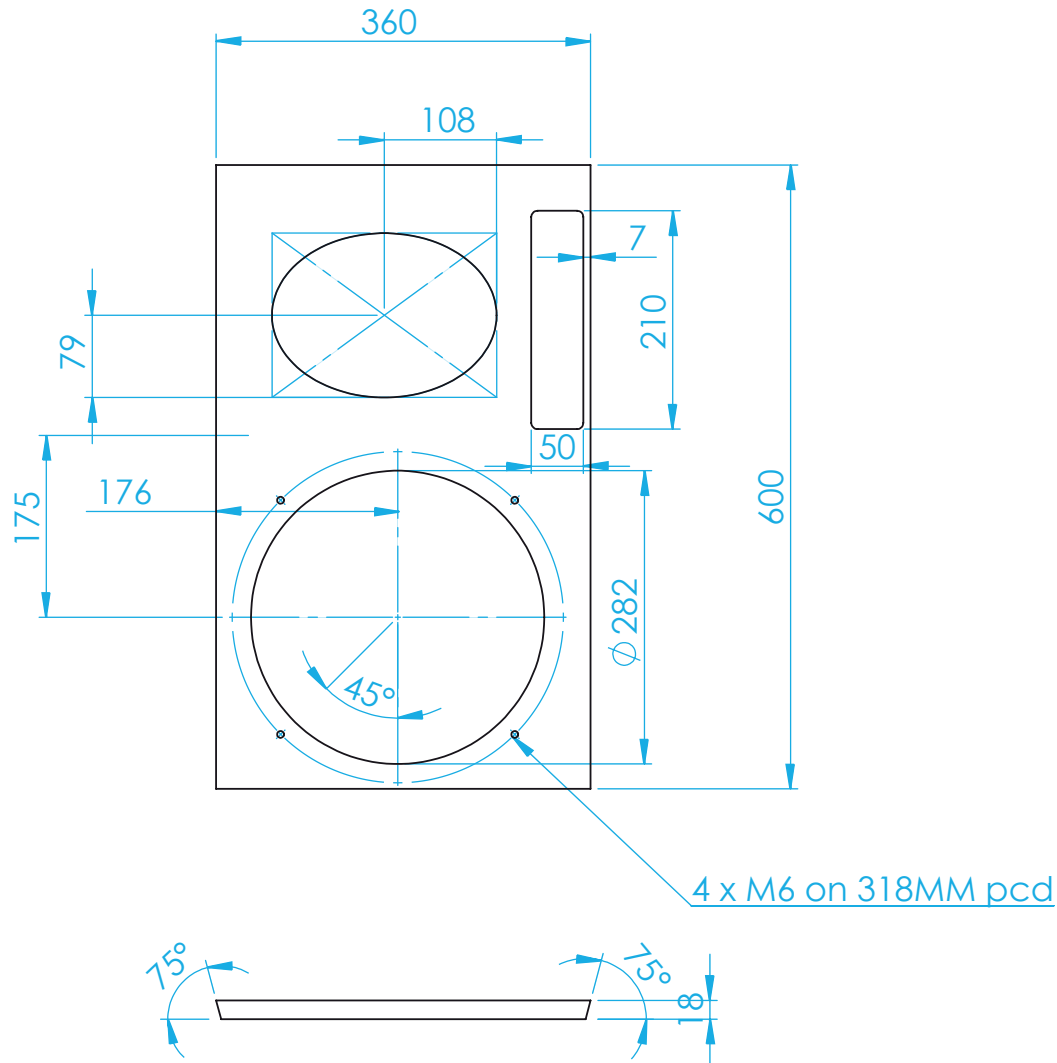
PROJECT: <b>PD-2W12-3</b>		PART: <b>1. Part 1A - Side Panels</b>		
NOTES: 18mm Ply. x2 Required.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>10 OF 16</b>



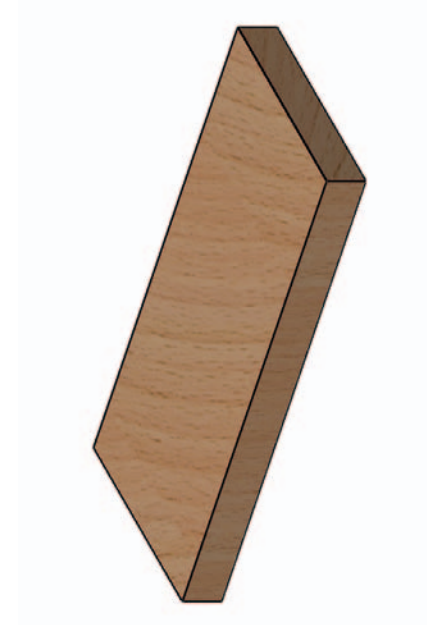
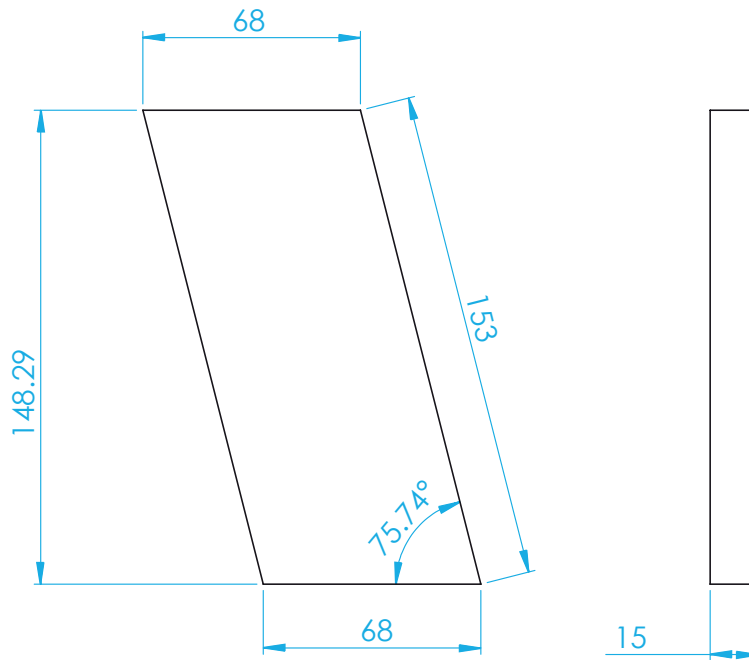
PROJECT: <b>PD-2W12-3</b>		PART: <b>2. Part 2A - Back Panel</b>		
NOTES: 18mm Ply.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>11 OF 16</b>



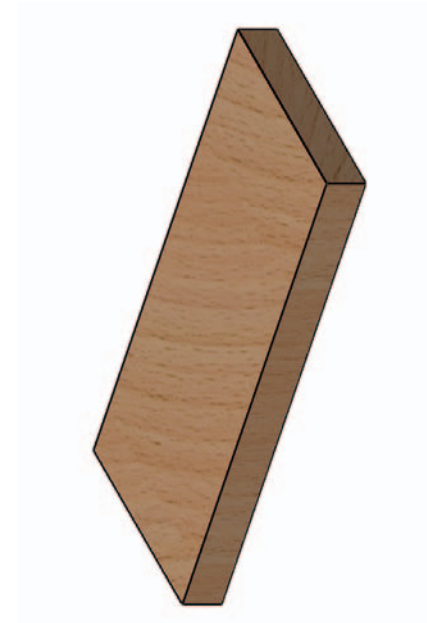
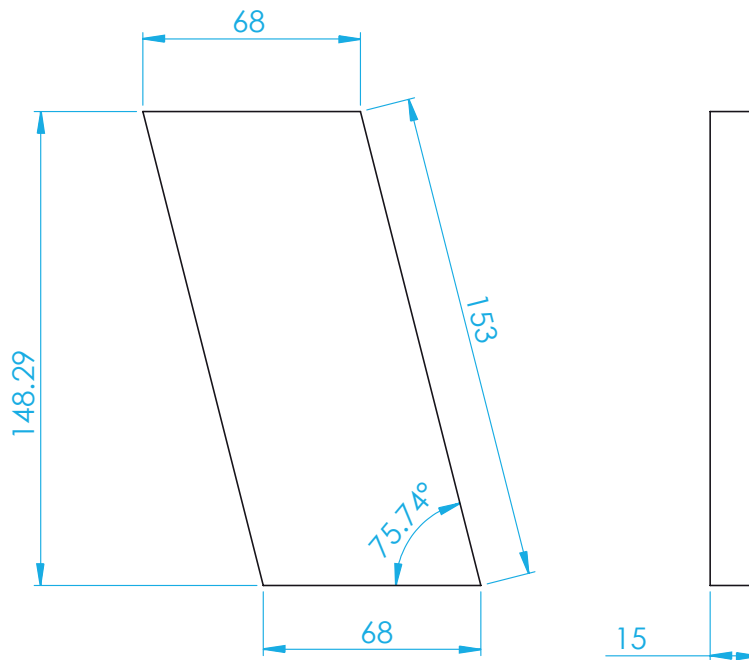
PROJECT: <b>PD-2W12-3</b>		PART: <b>3. Internal Brace</b>		
NOTES: 18mm Ply.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>12 OF 16</b>



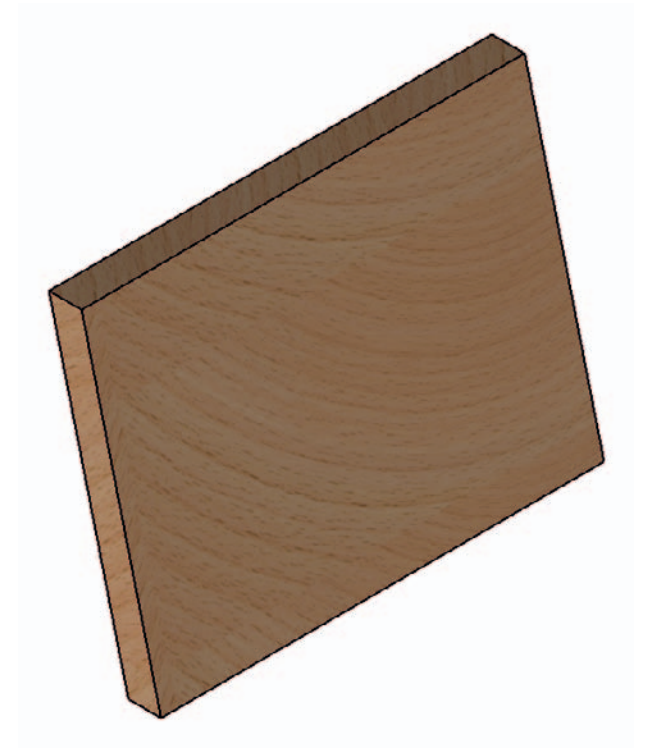
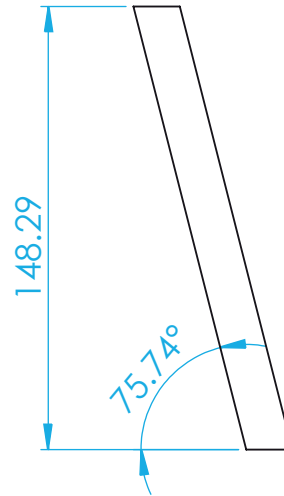
PROJECT: <b>PD-2W12-3</b>		PART: <b>4. Driver Mounting Baffle</b>		
NOTES: 18mm Ply.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>13 OF 16</b>



PROJECT: <b>PD-2W12-3</b>		PART: <b>5. Top / Bottom Panel</b>		
NOTES: 18mm Ply. x2 Required.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>14 OF 16</b>



PROJECT: <b>PD-2W12-3</b>		PART: <b>6. Port Panel Top / Bottom</b>		
NOTES: 18mm Ply. x2 Required.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>15 OF 16</b>



PROJECT: <b>PD-2W12-3</b>		PART: <b>7. Port Side Panel</b>		
NOTES: 15mm Ply.	REVISION: <b>1.0</b>	SCALE: <b>N/A</b>	DIMENSIONS: <b>MM</b> TOLERANCE LINEAR ± 0.4, HOLES +0.1/-0.0, NONE - CUMULATIVE	SHEET: <b>16 OF 16</b>