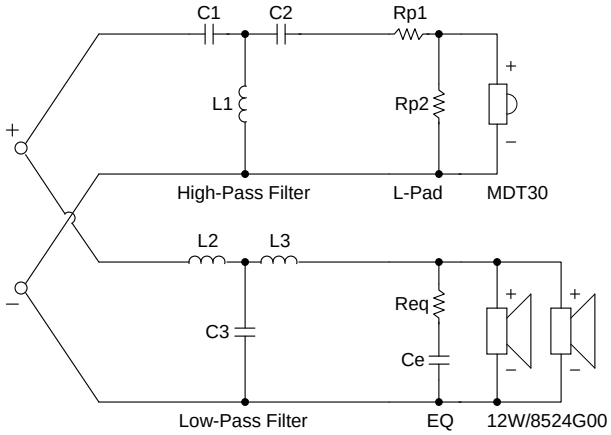
Custom Two-Way Crossover Network Design

By Denis Ouellet, Solen Inc.

2-Way Crossover Network
Low-Pass (LP) Filter: 1 required
  Type: 3rd-Order Butterworth
  Desired Corner Frequency: 2000 Hz
High-Pass (HP) Filter: 1 required
  Type: 3rd-Order Butterworth
  Desired Corner Frequency: 2000 Hz
C1 = 6.8 µF, Polypropylene, 0.00627 ohms
C2 = 22 µF, Polypropylene, 0.00362 ohms
C3 = 39 µF, Electrolytic, 0.161 ohms
L1 = 0.47 mH, Air Core (#20), 0.457 ohms
L2 = 0.33 mH, Litz (#16), 0.288 ohms
L3 = 0.11 mH, Litz (#16), 0.263 ohms

Tweeter
1.25 dB L-Pad
Rp1 = 1 ohms
Rp2 = 33 ohms

Woofer
Impedance EQ
Req = 3.6 ohms
Ce = 47 µF



Tweeter Properties

--Driver Description--
Name: MDT30
Type: Standard one-way driver
Company: Morel Ltd.
Piston: Hand treated fabric
Voice Coil: Hexatech with aluminum former
Terminals: Flexible wire
Magnet: Vented magnet system
Ferrofluid included
--Driver Configuration--
No. of Drivers = 1
--Driver Parameters--

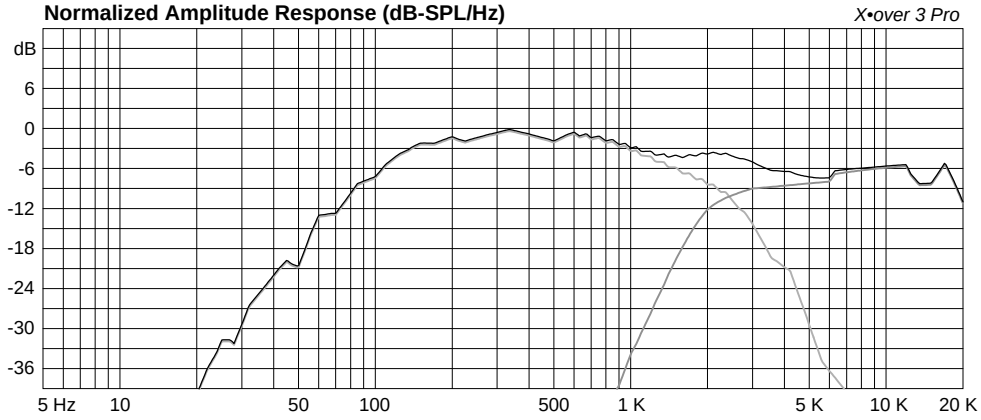
Fs =	700 Hz
Qms =	0.65
Vas =	0.01 liters
Qes =	0.85
Re =	5.2 ohms
Z =	8 ohms
Pe =	200 watts
Qts =	0.37
1-W SPL =	90 dB
2.83-V SPL =	90 dB

Woofer Properties

--Driver Description--
Name: 12W/8524G00
Type: Standard one-way driver
Company: Scan-Speak A/S
--Driver Configuration--
No. of Drivers = 2
Mounting = Standard
Wiring = Parallel
--Driver Parameters--

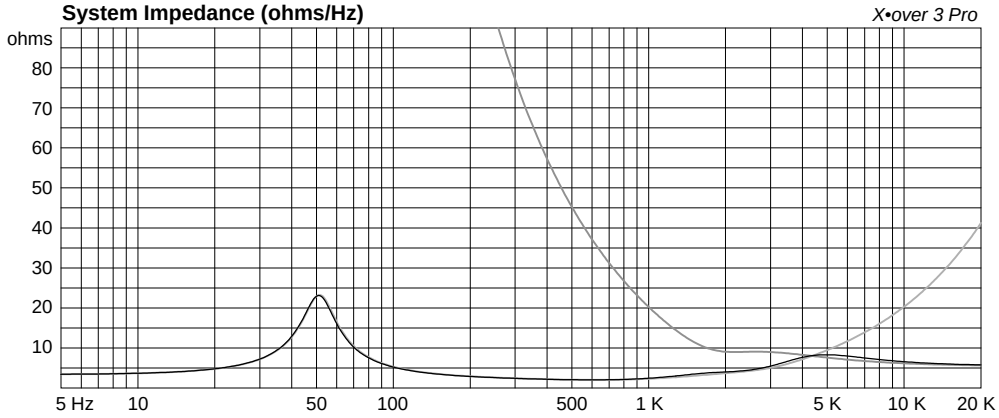
Fs =	57 Hz
Qms =	3.03
Vas =	6.1 liters [12.2]
Cms =	1.3 mm/N [0.65]
Mms =	6 g [12]
Rms =	0.7 kg/s [1.4]
Xmax =	3 mm
Xmech =	4.5 mm
P-Dia =	85.55 mm [121]
Sd =	58 sq.cm [116]
P-Vd =	0.0172 liters [0.0344]
Qes =	0.4
Re =	5.6 ohms [2.8]
Z =	8 ohms [4]
BL =	5.5 Tm [5.485]
Pe =	40 watts [80]
Qts =	0.35
no =	0.272 % [0.544]
1-W SPL =	85.5 dB [88.51]
2.83-V SPL =	85.5 dB [91.52]

Graph Key: LP HP Net



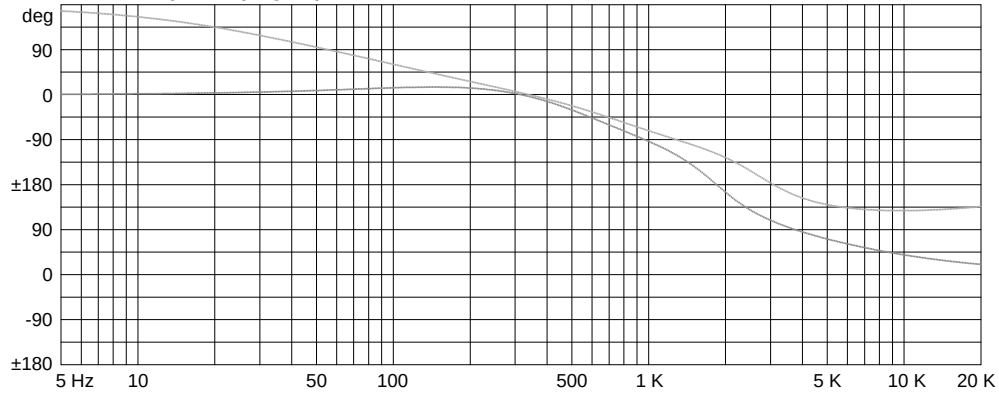
System Impedance (ohms/Hz)

X•over 3 Pro



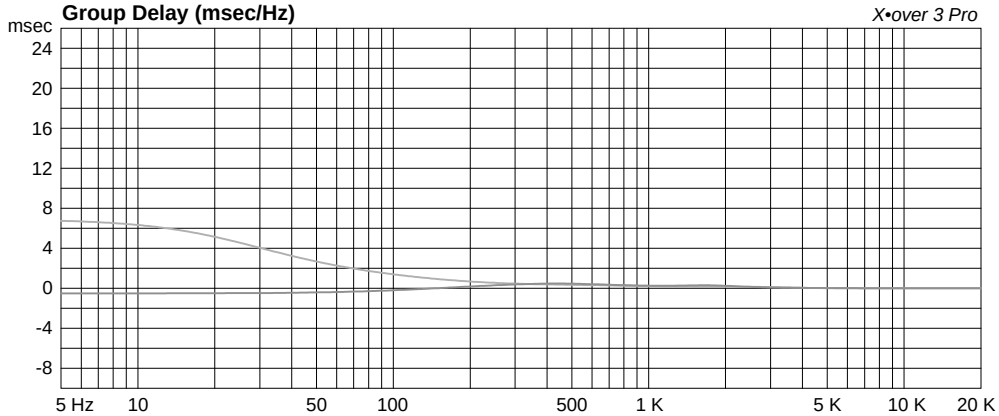
Phase Response (deg/Hb)

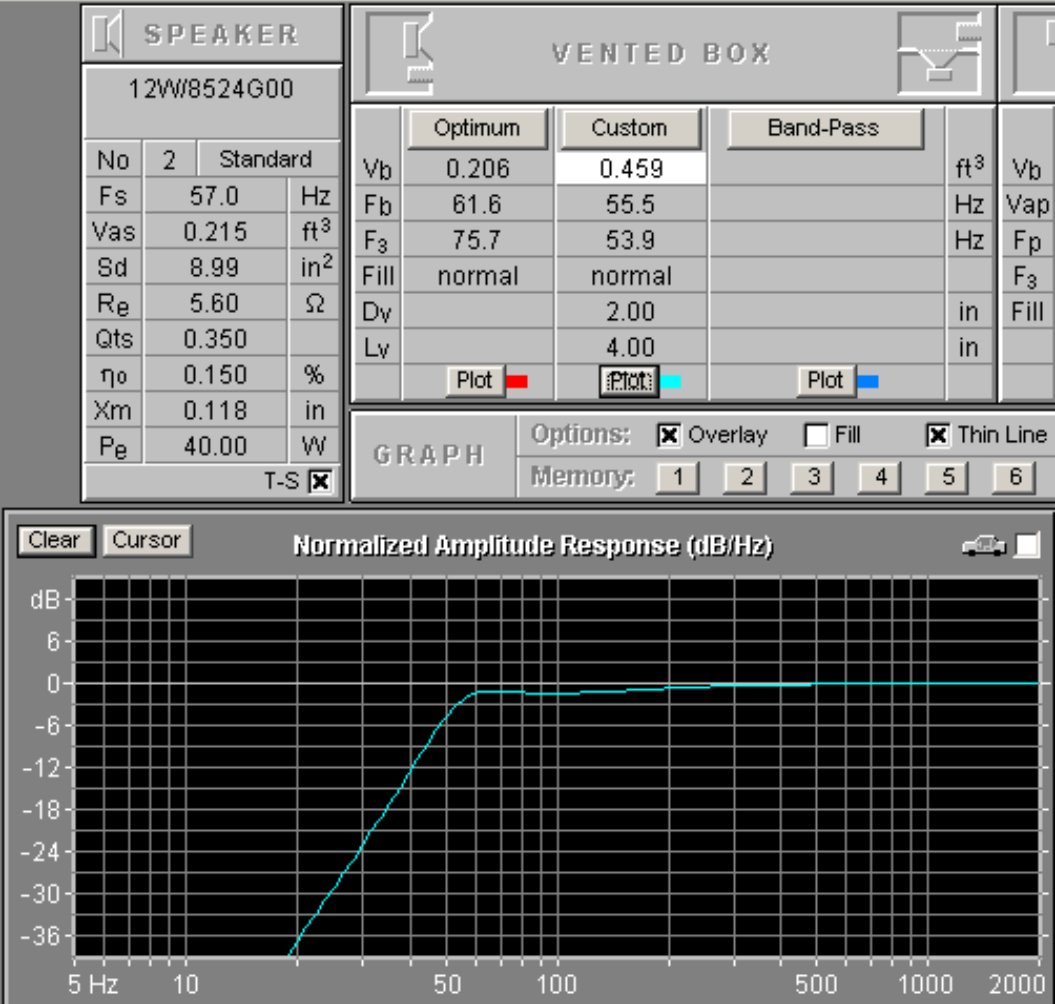
X•over 3 Pro



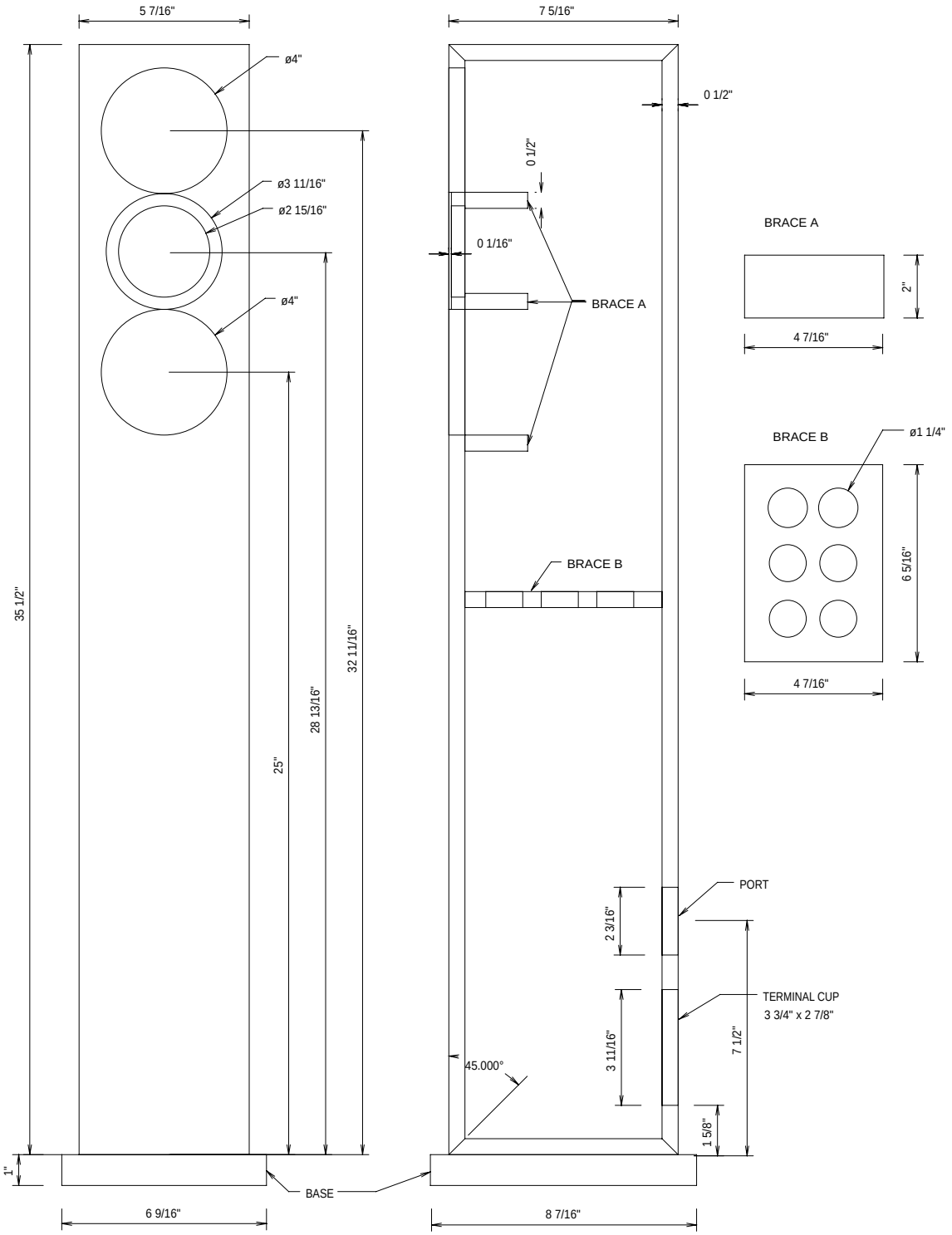
Group Delay (msec/Hz)

X•over 3 Pro

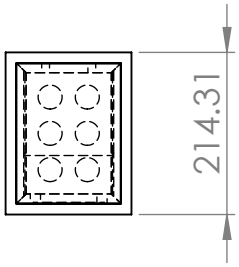


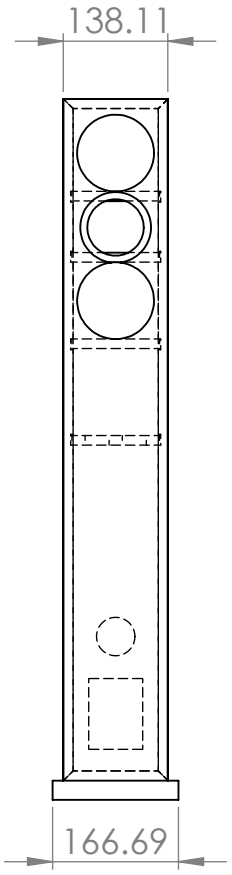

SPEAKER
12W/8524G00
No 2 Standard
Fs 57.0 Hz
Vas 0.215 ft3
Sd 8.99 in2
Re 5.60 Ω
Qts 0.350
ηo 0.150 %
Xm 0.118 in
Pe 40.00 W
T-S
VENTED BOX
Optimum
Custom
Band-Pass
Vb 0.206 0.459 ft3
Fb 61.6 55.5 Hz
F3 75.7 53.9 Hz
Fill normal normal
Dv 2.00 in
Lv 4.00 in
Plot
Plot
Plot
Vb
Vap
Fp
F3
Fill
GRAPH
Options: Overlay Fill Thin Line
Memory: 1 2 3 4 5 6
Clear
Cursor
Normalized Amplitude Response (dB/Hz)
dB
6
0
-6
-12
-18
-24
-30
-36
5 Hz
10
50
100
500
1000
2000

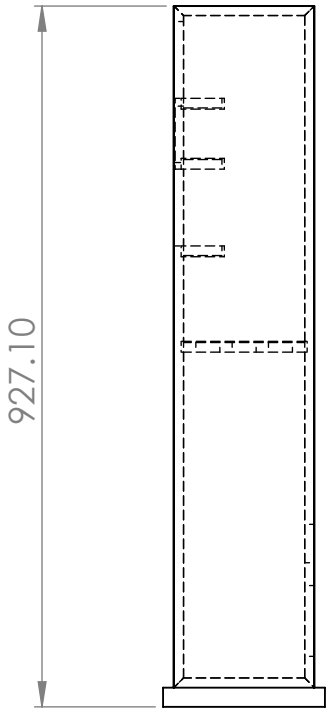
MANTIKA

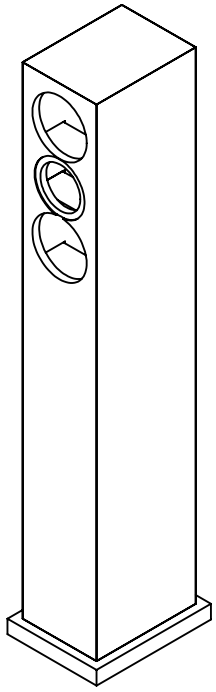

5 7/16"
7 5/16"
ø4"
ø3 11/16"
ø2 15/16"
ø4"
0 1/2"
0 1/2"
0 1/16"
BRACE A
BRACE A
2"
4 7/16"
BRACE B
ø1 1/4"
BRACE B
6 5/16"
4 7/16"
35 1/2"
25"
28 13/16"
32 11/16"
PORT
2 3/16"
TERMINAL CUP
3 3/4" x 2 7/8"
3 11/16"
7 1/2"
45.000°
1 5/8"
1"
BASE
6 9/16"
8 7/16"

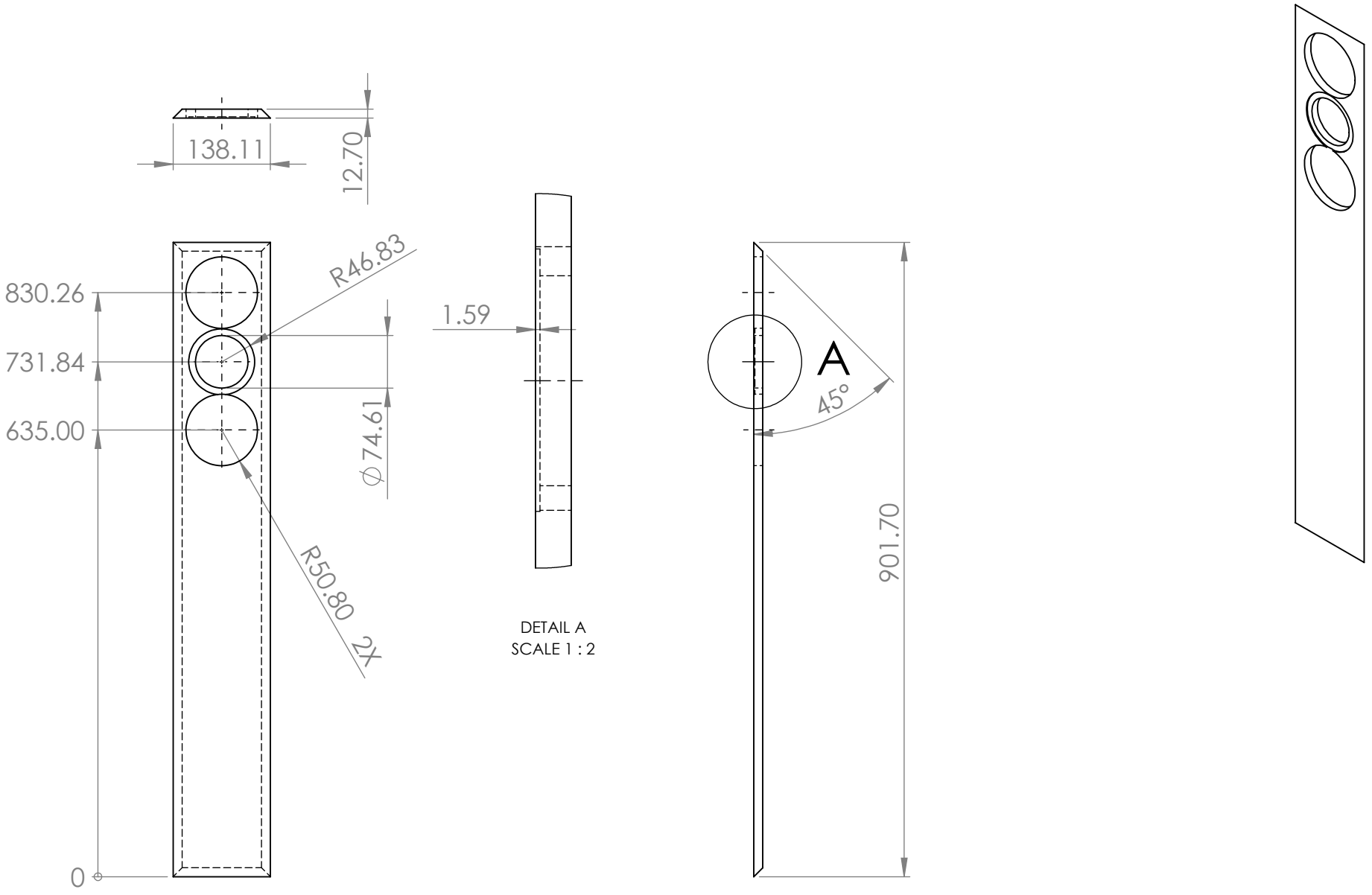
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Mantika - Base		1
2	Mantika - Dessous & Dessus		2
3	Mantika - Derrière		1
4	Mantika - Côté		1
5	Mantika - Côté		1
6	Mantika - Devant		1
7	Mantika - Brace B		1
8	Mantika - Brace A		3





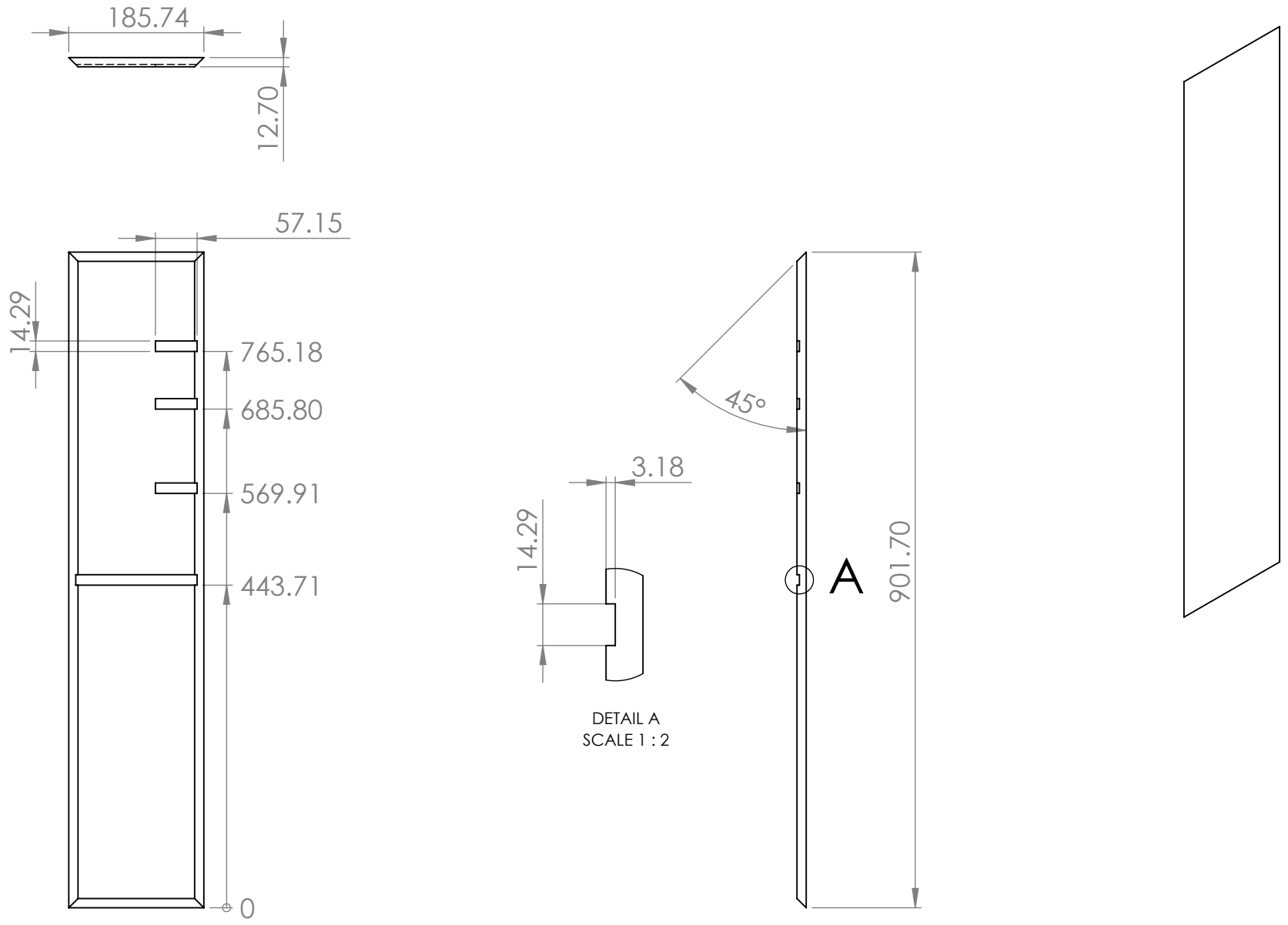




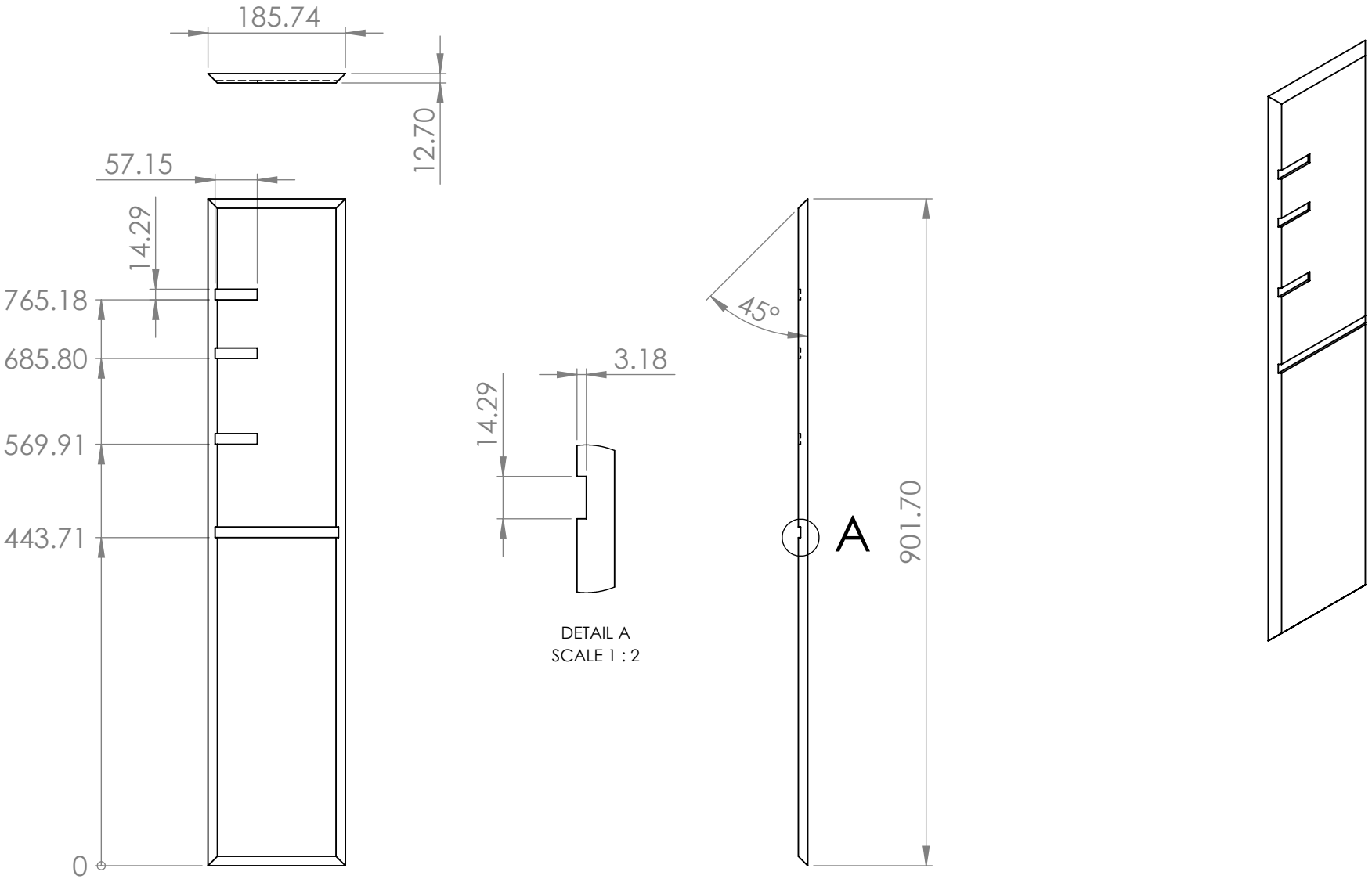


DETAIL A
SCALE 1 : 2

SOLIDWORKS


185.74
12.70
57.15
14.29
765.18
685.80
569.91
443.71
0
45°
3.18
14.29
A
901.70
DETAIL A
SCALE 1 : 2

SOLIDWORKS


185.74
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443.71
0
3.18
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DETAIL A
SCALE 1 : 2
45°
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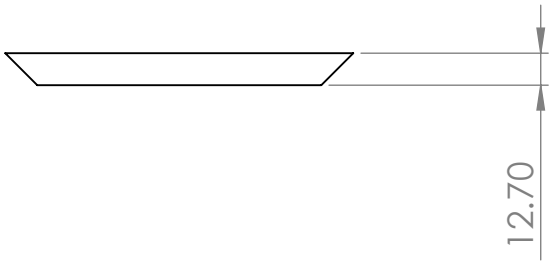
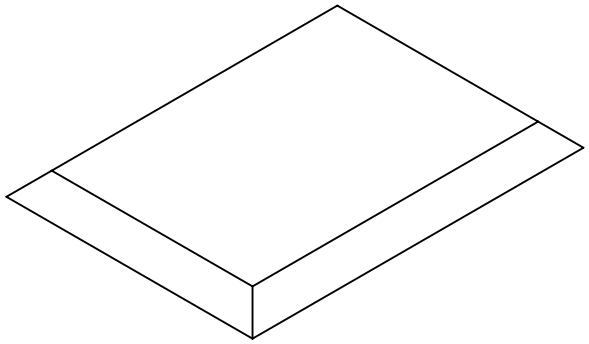
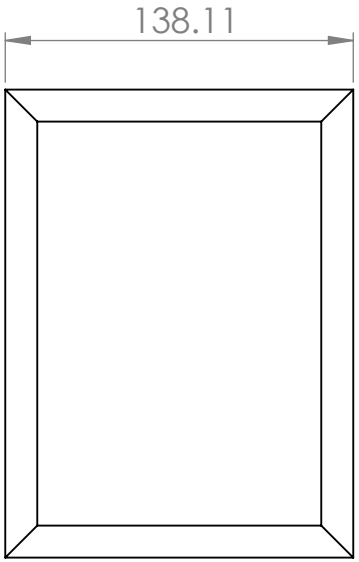
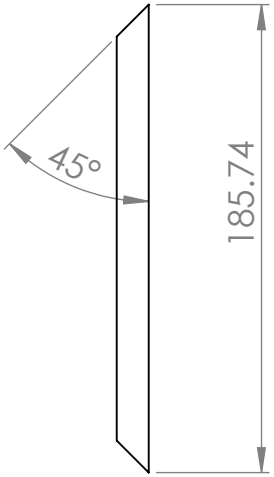
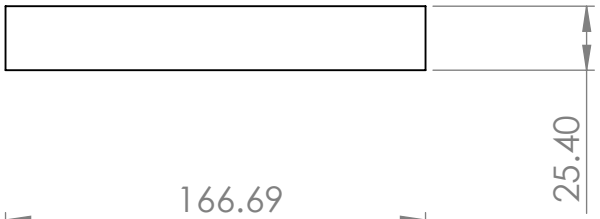
SOLIDWORKS


12.70

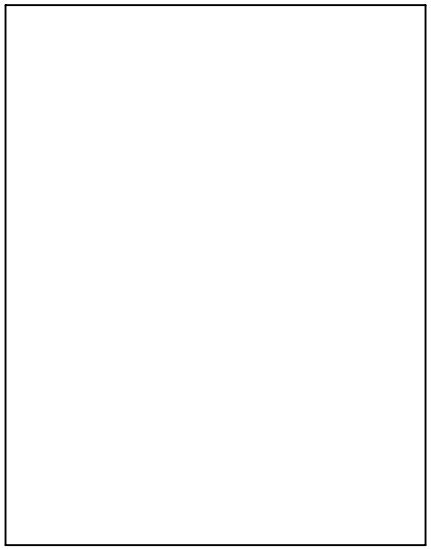



138.11

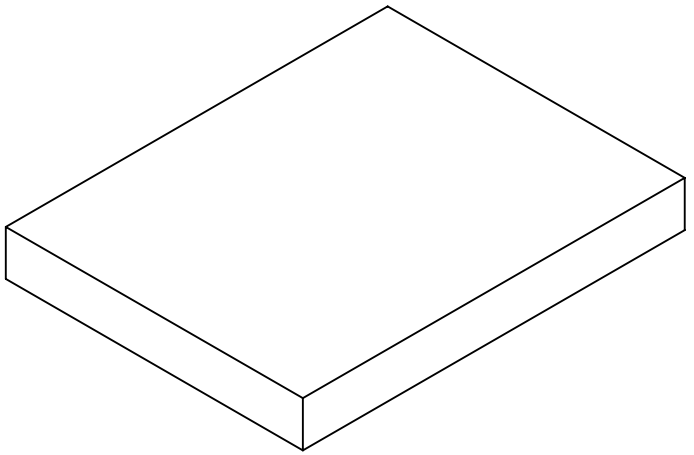

45°
185.74

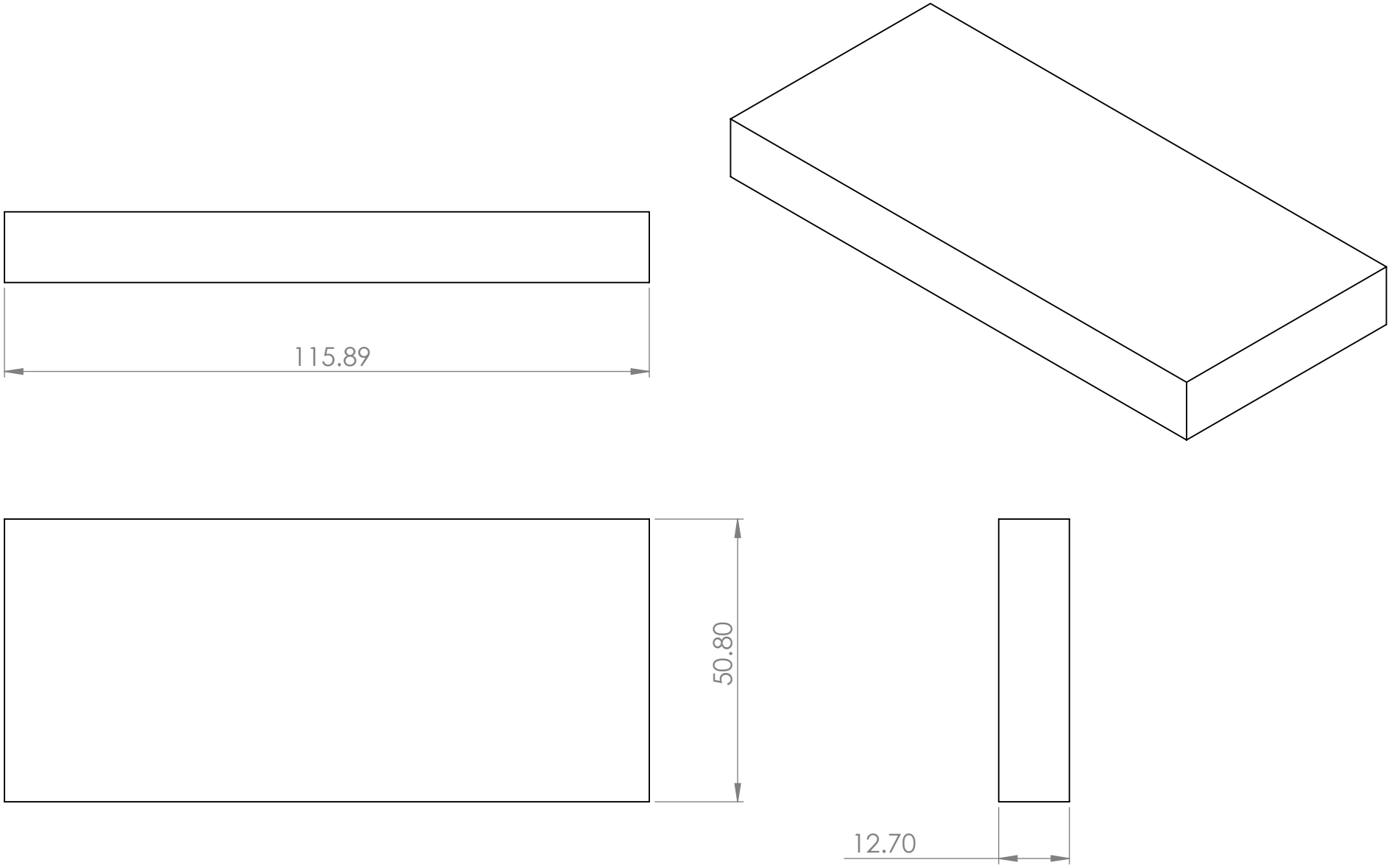

25.40


166.69




214.31





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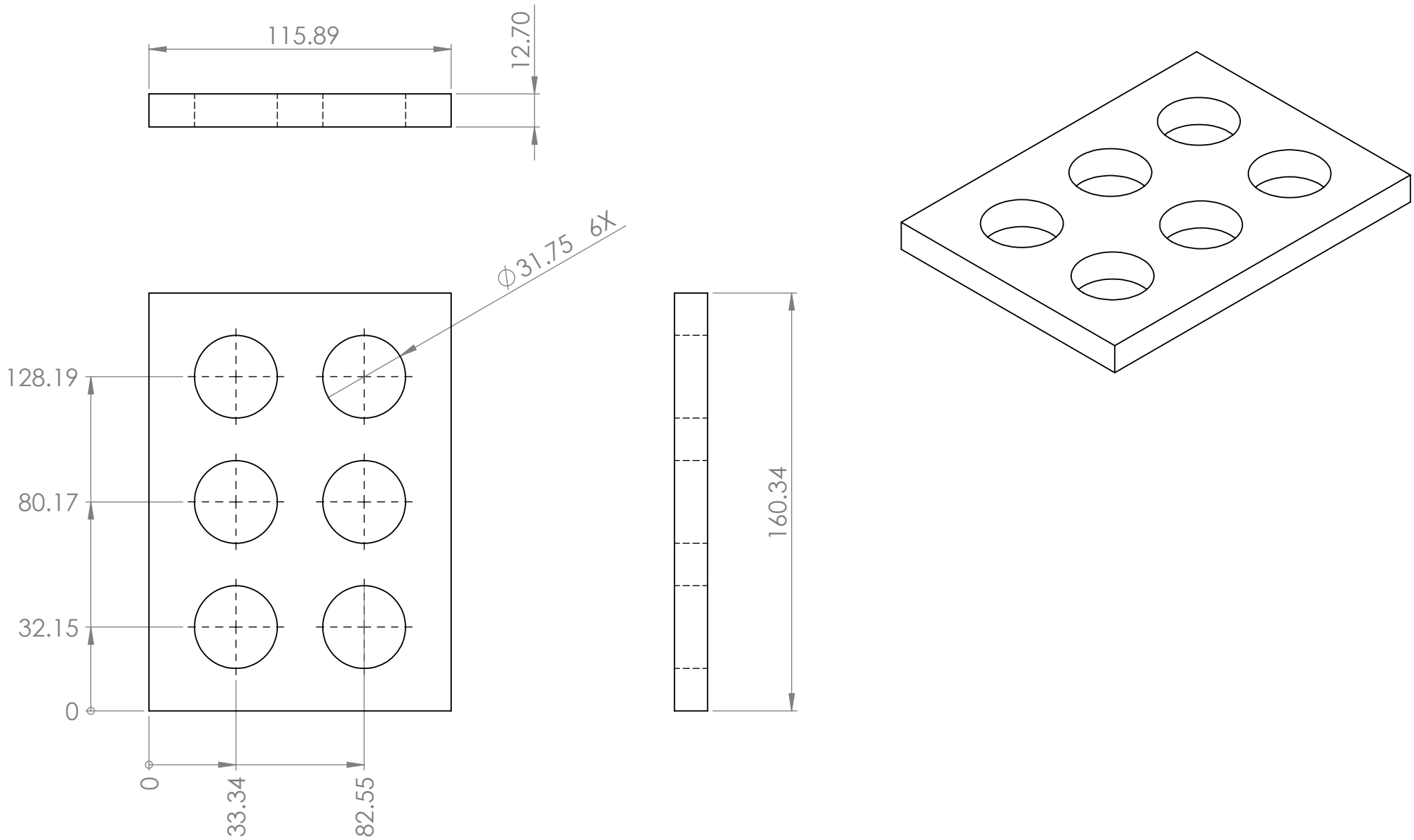

SOLIDWORKS