DESI DECIBEL

SWETON® SPEAKERS Since 1982

Loudspeaker, amplifier and mixer knowledge for the people who sell sound. Every week.

A note to our partners

A driver is only half a speaker; the box is the other half. This week's Speaker School answers the question every cabinet maker asks: port or no port? It decides how low the box plays, how loud, and how safe the driver is. Our product, the 18 PT 1500 SUB, is the 18-inch most ported sub boxes are built around.

Rahul Agarwal, Sweton Speakers

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Speaker School — Lesson 4

Ported vs sealed cabinets: what the port does

A cone pushes air forward and backward. The sound from the back is out of step with the front; let the two meet and the bass cancels. The cabinet exists to deal with that back wave, and there are two ways.

1 Sealed box — back wave trapped

The box is closed. The air inside acts as a spring behind the cone, so the cone stays under control. Bass rolls off gently and the punch is tight, but very low notes waste excursion.

> **Tell the customer**
> **Tight bass, forgiving to build, but less deep and less loud for the same driver.**

2 Ported box — back wave put to work

A tube (the port) lets the air in the box resonate at one frequency. Around that note the port does the work and the cone barely moves: more output and deeper bass from the same driver, up to 3 dB near the tuning.

> **Tell the customer**
> **Louder and deeper. Most DJ and PA subs are ported for this reason.**

3 Tuning — the port's own note

Box volume and port size together fix the tuning (Fb). Sweton's guide gives it per driver: for the 18 PT 1500 SUB, 160–180 litres tuned at 38–40 Hz. Change the port length and the tuning moves.

> **Tell the customer**
> **Build to the volume, port diameter and port length in the guide.**

4 Below tuning — where ported boxes get hurt

Below the tuning the port stops helping and the cone moves freely, as in open air. A 30 Hz note into a 40 Hz box can push it past Xmax. A high-pass filter near the tuning prevents it.

> **Tell the customer**
> **Every ported sub needs a high-pass filter. Set it near the tuning frequency.**

Same driver, two boxes: what changes

Deepest usable bass	**Ported**	About half an octave lower for the same driver
Output near the tuning	**Ported**	Up to 3 dB more, like doubling the amplifier
Punch and control	**Sealed**	Cone always under spring control
Building it	**Sealed**	No port to calculate; volume sets the sound

For an 18-inch DJ or outdoor sub, ported is the normal choice; the price is a high-pass filter, which is not optional.

Amp Corner — Amplifiers

Limiters: the cheapest insurance

A limiter refuses to pass a signal louder than the level you set. It costs nothing to switch on, and it is the difference between a loud night and a burnt coil.

The rule: set the limiter so the amplifier can never deliver more than the speaker's AES power. The operator can push the fader as hard as he likes; the limiter holds the line.

Peak limiter	RMS limiter	Where to set it
Stops the spikes Catches the single loud hit, the dropped mic, the pulled plug. Protects cone and surround from one violent excursion.	**Stops the heat** Holds the average level over seconds. This one protects the voice coil, which fails from heat, not from one hit.	**At AES power** Voltage for AES power at the speaker's impedance is √(P × R): 1500 W at 8 Ω is about 110 V at the output. Set the threshold there.

Example: two 18 PT 1500 SUB (1500 W AES, 8 Ω) on a big amplifier, one per channel, which can push 3000 W into each. With the RMS limiter set for 1500 W, the extra is headroom for clean peaks instead of a reason to recone.

Three limiter mistakes

Setting it from the amplifier's rating. The limiter protects the speaker, so the speaker's AES number is the one that matters.

Switching it off because "it sounds softer". If it works all night, the system is too small for the job and the limiter is keeping it alive.

Forgetting the high-pass on the sub. A limiter stops power; it does not stop a 25 Hz note throwing the cone past its limit.

Mixer Desk — Mixers

Microphone technique for MC and singer

Half the feedback complaints we hear are not about the mixer. They come from how the microphone is held. A few words to the person on stage fix more than any EQ.

Four things to tell the person holding the mic

1. Hold it close: two to five centimetres from the mouth. Closer mic, less gain needed, less feedback.
2. Hold the handle, not the head. Cupping the grille changes the pickup pattern and invites feedback.
3. Point it at the mouth, away from the monitor. Never let it face a speaker, even for a second while walking.
4. On the big notes, step back a little. The mixer will thank you.

Common mic problems

Popping on P and B
Angle the mic slightly off-axis, or fit a foam windshield

Thin, distant sound
Mic is too far; bring it to 5 cm or less

Howl when the MC walks
He crossed in front of the mains; mark a line on the floor

Muffled, boomy voice
Grille cupped or low EQ up; uncover it, cut the low

Why distance matters: each time the distance doubles, the mic picks up 6 dB less voice but the same room. A mic at 20 cm needs four times the gain of one at 5 cm, and that extra gain is feedback waiting to happen.

Product of the week — Sweton PT Series

18 PT 1500 SUB

Sweton 18-inch subwoofer with 1500 W AES power, a 5-inch voice coil and ± 11 mm Xmax, for ported DJ and PA sub cabinets.



Sweton 18 PT 1500 SUB, 18-inch subwoofer driver

18 PT 1500 SUB specifications

Nominal diameter	470 mm (18 in)
Impedance	8 Ω
Power handling (AES)	1500 W
Program power	3000 W
Sensitivity (1 W / 1 m)	96 dB
Frequency range	45–2000 Hz
Voice coil	126 mm (5 in), copper
Winding	In/out
Former	Glass fibre
Magnet	Ferrite
Gross weight	25.3 kg

Best use and cabinet type

DJ, rental and outdoor subwoofer cabinets. Sweton's enclosure guide: vented box, 160–180 litres net, tuned at 38–40 Hz, with two 4-inch ports 6.5 inches long, or a single 6-inch port for smoother airflow. Low-pass the sub at 80–120 Hz, 24 dB per octave.

Amplifier power needed

1500 to 3000 W at 8 Ω for each driver, run without clipping, with a limiter set at 1500 W.

Keep in mind

- Set the high-pass filter at or just below the box tuning, about 35–40 Hz. Below the tuning the cone is unprotected.
- It weighs 25.3 kg; the cabinet with two drivers will need two people and good handles.

Read it with the four numbers

Power handling

1500 W AES, 3000 W program, on a 5-inch in/out coil. Enough for a full night outdoors without the coil cooking.

Sensitivity

96 dB. With 1500 W, that calculates to about 128 dB at 1 metre from one driver, before the port adds its share.

Impedance

8 Ω. Two in one cabinet in parallel make 4 Ω, a comfortable load; or one per channel at 8 Ω with a bigger amplifier.

Frequency response

45–2000 Hz, Fs 45 Hz, Xmax ± 10.96 mm. It is built for the ported box in this issue's lesson: deep, with the excursion to use it.

Three lines for your counter

1. 5-inch coil and ± 11 mm Xmax: it moves the air a real 18-inch sub should.
2. 1500 W AES is continuous, tested under the AES2-1984 standard and measured on the Klippel Analyzer.
3. Recone kit REC18PT1500SUB is available. Made in Kolkata, India by Sweton, since 1982.

Open the enclosure guide — Open the spec sheet

Thiele-Small parameters for cabinet makers

Fs	Qts	Qes	Qms	Vas	Xmax
45 Hz	0.39	0.40	13.87	109.65 L	± 10.96 mm

Bl	Sd	Re	Le (1 kHz)	Mms	EBP
32.39 T·m	1237.86 cm^2	5.98 Ω	1.91 mH	248.8 g	113 Hz

Overall diameter 470 mm, bolt circle 445 mm, baffle cut-out 420 mm, depth 211 mm, flange and gasket 22 mm.

Counter Talk

Selling

Customer

"My cabinet maker says a bigger port gives more bass. He wants to make it 8 inches wide."

How to answer: three things to tell him

1. **A wider port is not more bass; it is a different tuning.** Widen it without lengthening it and the tuning rises: the box plays higher, not deeper.
2. **Volume, port diameter and port length belong together.** Sweton's guide gives all three. Change one and the other two must change.
3. **Too small a port chuffs on loud notes.** That is why the guide offers a single 6-inch port as an alternative: smoother airflow at the same tuning.

Hand him the enclosure guide from our website. A cabinet maker who builds to the printed numbers gets a box that works first time, and comes back for the next driver.

Myth or truth?

"A bigger box always gives more bass."

Myth

A box bigger than the guide's volume lowers the tuning but also the output around it, and the cone loses control sooner. The right volume comes from Vas and Qts, not from the size of the van.

See the PT Series range on our website

Question of the week

Last week's answer

High-pass the HF driver at 1.5–1.6 kHz; lower sends energy the diaphragm cannot take.

An 18 PT 1500 SUB box built to the guide, tuned at 40 Hz, but with no high-pass filter. What happens on a 28 Hz bass drop, and what is the fix?

WhatsApp your answer to **70444 11800**

The answer is in the next issue.

Next week

Issue 05

Speaker School
Thermal compression: why a system shrinks at 2 am

Amp Corner
Mains, generators and voltage drop

Mixer Desk
The feedback hunt: finding the ringing band

Next product
CD 240 NEO, a compression driver

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Desi Decibel is the weekly dealer newsletter of Sweton Speakers. Sweton is an Indian loudspeaker brand, established in 1982 and manufactured by Octune Electronics LLP in Kolkata. Power ratings follow the AES2-1984 test standard. Specifications are as shown on swetonspeakers.com on 28 October 2026.