

Tip #38 Why No Back Box for the IWTS-28 SUB?

The new IWTS-28 SUB is one impressive piece of gear, no? It solves a multitude of problems, not the least of which is how to install some good bass into a wall in a retro-fit situation for not a lot of coin.

The IWTS-28 SUB uses a standard GFR-626 grille/frame (just like our IWTS-626, -727, and IWTS-30 LCR models) and mounts as easy as pie. With its dual heavy-duty 8" long-excursion woofers and switchable on/off low-pass filter, you can run the 28 SUB either with our optional SA-180 mono block subwoofer amp or right off the receiver's front L-R speaker outputs.

The IWTS-28 SUB does not require a back box. It is designed to work properly in a standard full-sized wall cavity, commonly called an "infinite baffle." Other infinite baffle subs suffer because their drivers are not true infinite baffle drivers—instead, they require a very specific air volume, and when you take them out of that air volume and stick them in a random airspace, their performance deteriorates.

The 28 SUB's drivers are designed to be actual infinite baffle drivers—they work well in an open back situation and they're pretty tolerant of the amount of air they're in.

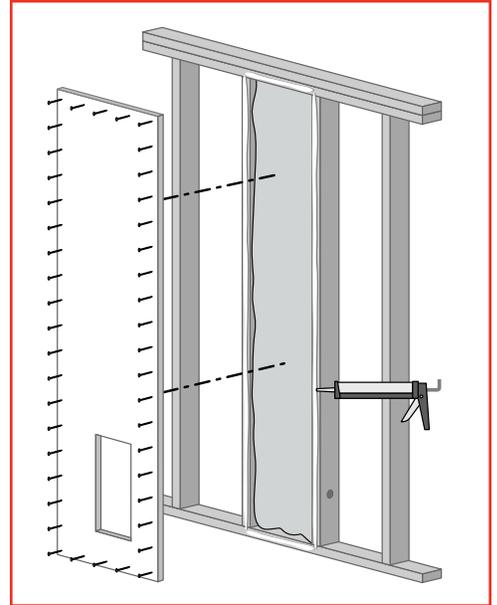
The technical definition of Infinite Baffle is a baffle of "infinite dimension" that isolates the woofer's front wave from its back wave, so the two waves—which are out of phase with each other—never meet and cancel each other out. If the wall cavity is leaky, then the rear wave will escape and "partially" meet the front wave and "partially" cancel it out.

But the reason that other people's subs may work well in a closed box but sound lousy in an infinite baffle installation is that they're actually "closed box" woofers, designed specifically for acoustic suspension or bass reflex enclosures. And when you take them out of the environment they were designed for, they sound bad.

Look at any good open-back in wall or in-ceiling speaker like our 7 LCR or 6.2e: Those are infinite baffle (open back) speakers, and they produce real bass and sound great even without a back box. The 28 SUB is designed as an infinite baffle speaker also, and it sounds great as well. Its dual 8" woofers produce lots more bass than the 7 LCR's single 6 1/2"—and the 7 has great bass!

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Figure 1



Seal the drywall-to-stud seams, screw the drywall securely to studs.

Figure 2



Try all three LFEQ settings to get the best balance.

Other Tech Tips:

Tip 34: Why isn't the 30 LCR an IWCB?

Tip 35: New x400 Sats vs. x200 Sats?

Tip 36: IWTS IP vs. non-IP versions

Tip 37: That's a Gross Distortion

The 28 SUB still needs to be mounted in an intelligent manner—if the wall cavity it's mounted in leaks badly from front to back, for instance, then the “baffle” is not so “infinite,” is it?

Also—

- Make sure there are no extraneous house electrical wires, plumbing, junction boxes, or other items that could rattle or vibrate. A real subwoofer moves a lot of air, and if something *can* rattle, it probably *will*. It's much easier to 'button everything down' securely before you install the sub then to try to hunt down an intrusive buzz later on.
- Seal all the stud-to-drywall seams with a flexible silicone construction caulk. This will help keep the drywall itself from flexing and rattling against the studs, and it helps form a more airtight “enclosure” for the 28 SUB.
- Fill the wall cavity loosely with acoustic speaker stuffing (“polyfill”). Do not pack the stuffing in extremely tight; in fact, that will *reduce* the bass output. See fig. 1.
- If this is new construction, we strongly recommend using $\frac{5}{8}$ " or $\frac{3}{4}$ " sheetrock. It's heavier and more expensive than $\frac{1}{2}$ " material, but it's far superior in terms of acoustic/mechanical integrity and rigidity. We strongly recommend that the sheetrock be screwed to the studs every 6 inches or so, instead of the more common practice of nailing it every 12-18". Use screws for at least a full stud bay on either side of where the 28 SUB will be mounted.
- If you drill a hole in the stud to snake the speaker wires through, be certain to seal that hole with silicone caulk.

If you are using the SA-180 subwoofer amplifier, experiment with its rear-panel Low Frequency EQ settings to obtain the most satisfying tonal balance. Position no. 2 will probably be the right setting for most installations, but try them all. See fig. 2.

