

## Sound in P&D F-unit kits

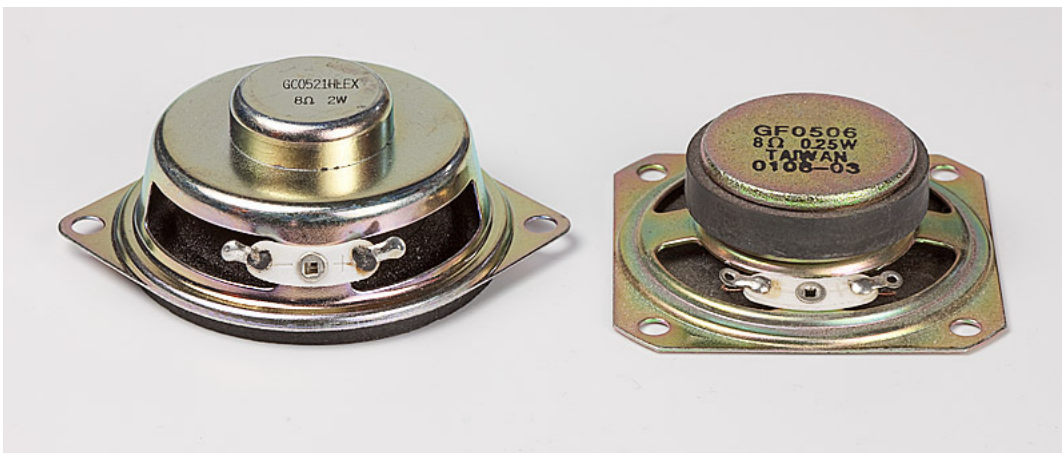
**Bob** #1 February 14, 2016, 10:33pm

There is a thread going on the OGR 2-rail forum about DCC sound. Not wanting to shortchange A&O forum readers, here is a duplicate of content I posted there.

The P&D F3s kits shown in the short video Short Video Link each contain a 2 inch speaker, Soundtraxx DSX 1st Generation sound decoder, and a new speaker coupling capacitor.

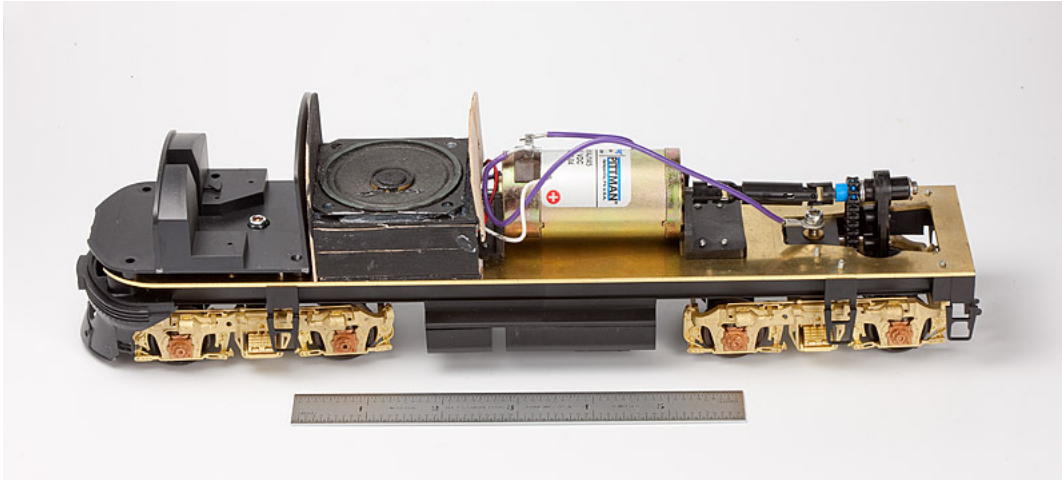


On the right is the 2 inch speaker used, purchased in bulk from a surplus store long forgotten. For comparison on the left is a new QSI high-bass speaker.



The QSI speaker produces better bass response but is considerably deeper; that can be challenging in some installs.

Here is one of the speaker cabinets used in in the video placed on the frame of a new P&D F3 kit.



The vertical, rounded baffles help keep the enclosure in place during transportation, and pinch-off the motor cavity to diminish the body resonance. The basswood enclosure is stuffed with ordinary fiberglass house insulation. The speaker and wire outlets are sealed airtight with silicone caulk to prevent back pressure from leaking out and canceling some of the bass notes.

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### [How to find files in the AO Archives](#)

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**Bob** #2 February 14, 2016, 10:33pm

Also shown in the last photo of the last post is part of the optional cab detail kit, which I really enjoy adding to my kits for nighttime operation. Here's are two reasons why. (I'm addicted to lights.)



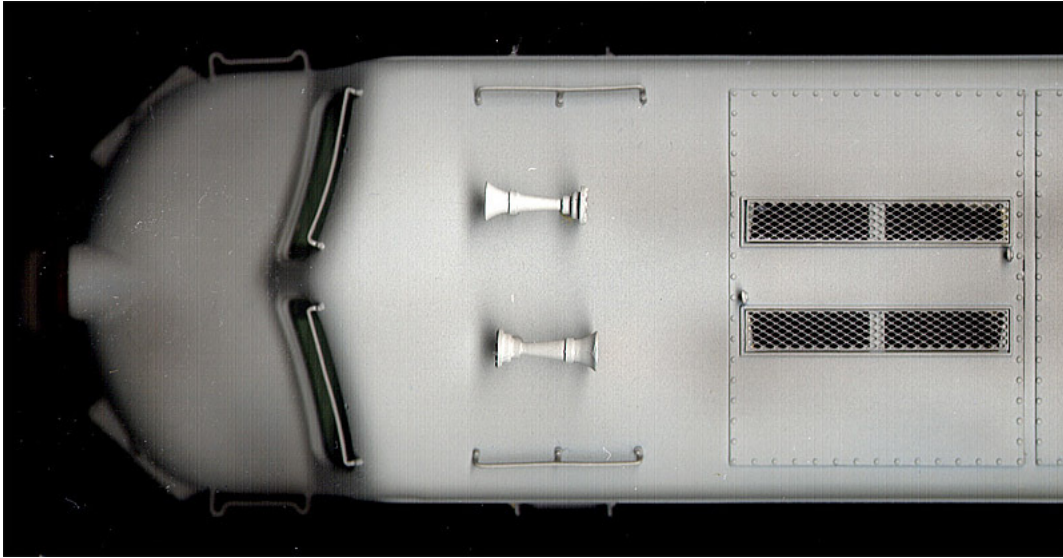


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**Bob** #3 February 14, 2016, 10:33pm

Sound exits the shell just ahead of the exhaust stacks, through the dynamic brake exhaust on the roof and intakes on the sides.



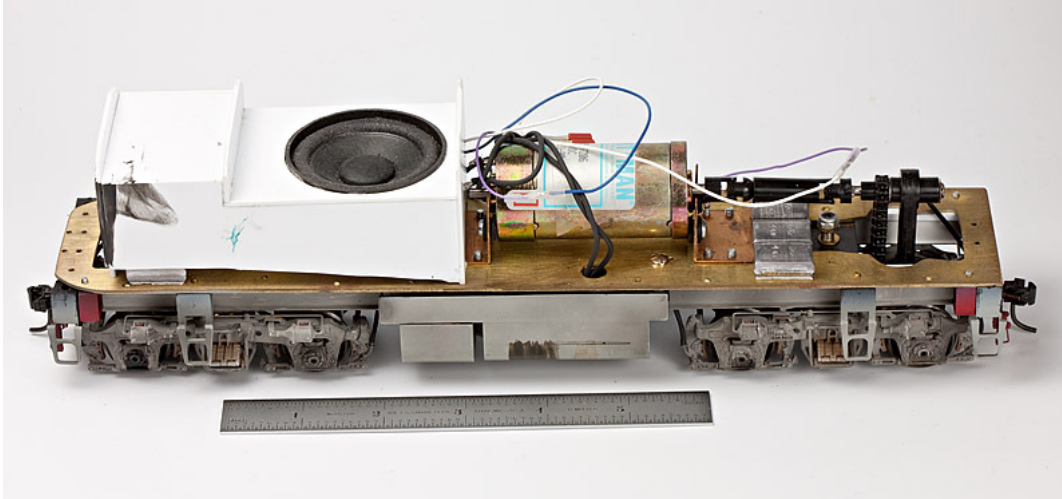


Now about that speaker coupling capacitor. The first DSX decoders I bought came with both 33uF and 47uF nonpolarized capacitors and later ones just a 33uF. Although I never measured any significant DC voltage at the amplifier output that needed to be blocked, I always installed the larger one. But one day a light came on – coupling an 8 ohm speaker through a 47uF capacitor starts to produce a bass rolloff at 423 Hz. That seemed a bit aggressive even for << 1 inch speakers. I tried a 220uF non-polarized capacitor and it dramatically improved bass response with my 2-inch speaker. A 220 with an 8 ohm load starts rolling off at 90 Hz.

Since the videos were shot, David's A&O 1.0 was torn down and a newer, much bigger layout started. In the mean time, QSI came out with the high-bass 2-inch speaker. I had to try one. Also, Soundtraxx finally released a Tsunami replacement for the DSD-150 (but neither the DSX nor the O-

scale version.) That combination sounds even better to my ears. The speaker produces much better bass, and the new sound files are much closer to what I heard (and recorded) when hogging an SD9 in Northern Colorado (including the generator whine.)

This is the chassis of the video B unit with a newer, larger enclosure and a high-bass speaker. Enclosures for the A units will of course be smaller. For those I'll need to flip the motor end-for-end so that the brush connections and unused motor shaft end don't try to puncture the enclosure.



Cheers.

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**rnb3** #4 February 14, 2016, 10:33pm

Has anybody looked at any of the programmable sound decoders out there yet? The kind where you load your own sound files that you record.

Bob, I enjoy watching your videos from the "old days". I'm thinking a stationary sound device needs investigating to add flange squeal around the corners! Maybe use a detection system to trip a sound loop when the train passes a tight spot?

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**David** #5 February 14, 2016, 10:33pm

Rick-

A "wheel squeel" or "ka-chunck, ka-chunk" over a diamond (etc.) is one of those long desired add-ons once I get to that stage. Allan Keller's GMR DVDs dub this stuff in so nicely and provides a nice

additional bit of sound realism to the scene. I've also thought of doing some recording at a coal loadout site and prep plant for inclusion into such locations on 2.0 (or on the A&D?).

The rain CD in Walden Spring on 1.0 was a fun, similiar affect.

dcs

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**Bob** #6 September 27, 2016, 5:47pm

Here's a bit of an update. The 2.07" QSI/Tony's Train Exchange speaker is no longer available. Lately I've been very impressed by Tang Band speaker modules. Since I have 6 more F-units to build, I'm doing some early space planning to see if a T1-1828SD module would fit between the rear cab wall and the motor.

At first glance it is too tall, but can fit if I mill a hole through the frame and front motor mount to receive the passive radiator end of the module. Fortunately, I believe I can just barely make that cut on my Sherline 2000 mill and rotary table. The extra effort should be well worth it, since the TB speaker has usable bass down to about 75 Hz.

Primary sound will still leave the body shell through the dynamic brake carbonyl filters on the sides, and the DB exhaust slots on the roof. Extended bass will fire down and reflect off the roadbed.



It will probably be a while before I get back to this project. I updated this thread after fielding questions about P&D F units.

