# The 1S clone

Response 1SC

On request, here is a design resembling the amended Response 1S speaker.

The Response 1S speaker has been replaced by the Response 1SC speaker where apparently the same transparent XP cone now is fitted into an EXCEL chassis with copper plated magnet parts and copper phase plug.

Available for the DIY community is the SEAS H702 = T14RCY/P-H driver of more ordinary quality fitted with a plastic phase plug. Except for possible higher voice coil inductance and higher 3rd harmonic distortion, this unit may provide much of the OEM product used in the original 1S design.

**Drivers**
Bas-mid: SEAS H702, T14RCY/P-H
Tweeter: Scan Speak D2010/8513-00

Fig. 1. SEAS H702, T14RCY/P-H.

Fig. 2. Scan Speak D2010/8513

**Crossover**

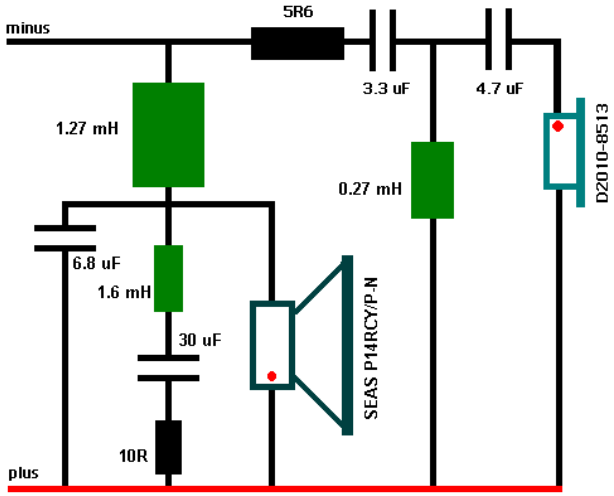



Fig. 3. Original Response 1SC crossover.
Thanks Paulie! The old 1S schematics has not been available, but I'll bet it's not that much different from this one.
We will see later how this design performs with our non-OEM drivers.

**Cabinet**
Outer cabinet dimensions are 305 (H) x 178 (W) x 235 (D). If made of 20 mm panel board this leaves an internal volume of 7.4 liters minus volume taken by drivers, port and CO.
You can make the cabinet of 20 mm MDF all over. My own version is made from 16 mm Baltic birch plywood except the front panel being made from 20 mm material. Internally, panels are covered with 5 mm bitumen sheets except for front panel. I have added bracing of a 12 mm panel between drivers. See picture nn.
The original vent is 50 x 140 mm giving a box tuning of 65 Hz.

**TS-data, measured by CLIO**

| MANUFACTURER | SEAS |
|---|---|
| MODEL | T14RCY/P-H |
| Fs | 41.2 |
| Diameter | 100 |
| Re | 5.79 |
| Rms | 1.54 |
| Qms | 1.57 |
| Qes | 0.33 |
| Qts | 0.27 |
| Cms | 1.60 |
| Mms | 9.3 |
| BL | 6.5 |
| VAS | 13.8 |
| dBSPL | 86.7 |
| L 1kHz | 0.86 |
| L 10kHz | 0.33 |
| SD | 0.0079 |

Fig. 4. T14RCY/P-N, TS-data.

**Predicted room response**

| T14RCY/P-H | |
|---|---|
| **Woofer:** | |
| Vas (l) | 13.8 |
| Fs (Hz) | 41 |
| Qts | 0.27 |
| Re (ohm) | 5.79 |
| Series res (ohm) | 0.4 |
| Qtsn | 0.288 |
| **Vented box:** | |
| Vb (l) | 7 |
| Fb (Hz) | 65 |
| Ql | 7 |
| F3 (Hz) | 55.3 |
| Vent diam (cm) | 4.6 |
| Vent length (cm) | 13.5 |
| **Woofer placement:** | |
| Dist to floor (cm) | 80 |
| Dist to back wall (cm) | 100 |
| Dist to side wall (cm) | 180 |

Fig. 4. JPO bassandroom Excel sheet.

The calculation sheet predicts a port of 4.6 cm internal diameter and a length of 13 cm. This seems (for once) to match reality.

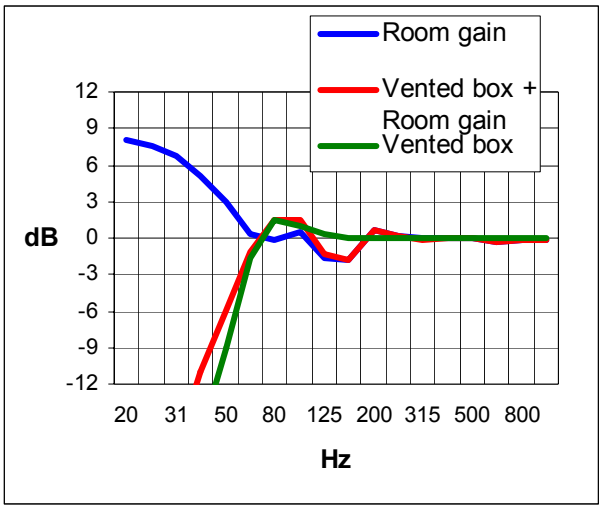



Fig. 5. Predicted room response.

Placed on a 70 cm high stand at 1 m to the back wall this speaker should provide us with a reasonably flat bass response down to 65-70 Hz.

**The real world**

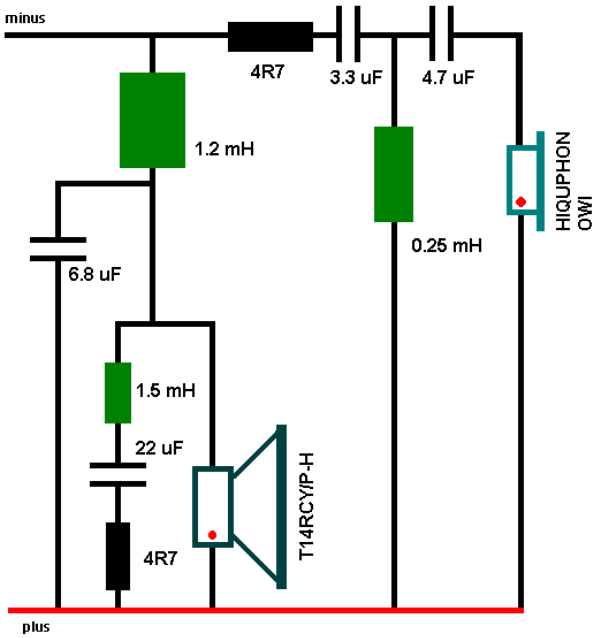
First of all a cabinet has to be made. This is a plain rectangular box and I'll save you for yet another box construction description. Here are a few pictures that tells the story:

**1S mk2**

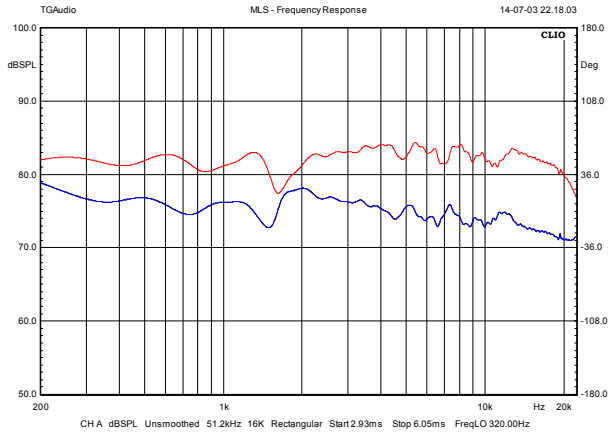
If you want to use a better tweeter than the Scan-Speak D2010/8535 I suggest the HIQUPHON OWI as an obvious choice.


Hiquphon OWI

**Schematics:**




1S mk2 schematics.




Frequency response S1 mk2
Red = frequency response.
Blue = minimum phase.