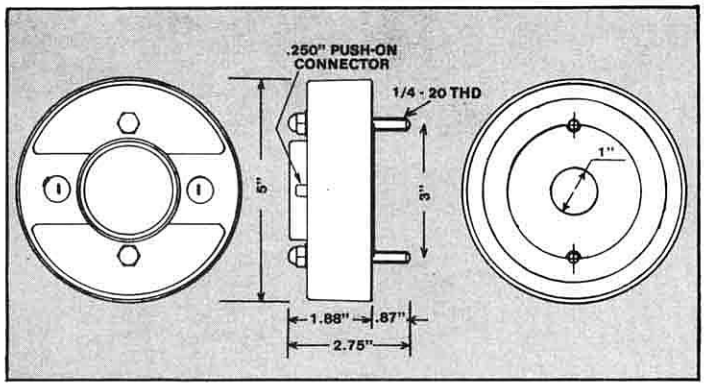


# TECHNICAL DATA

## RENKUS-HEINZ SSD1801 COMPRESSION DRIVER

U.S. PAT. NO. 4336425
Other Patents Pending




## Description

The Renkus-Heinz Model SSD 1801 high frequency compression driver features response to beyond 20 kHz, excellent transient characteristics, very low distortion and superior power-handling. With this unique combination of features the SSD 1801 driver is setting new standards in the high level reproduction of complex audio signals. It's patented design also provides for unprecedented ease of servicing, diaphragm assemblies can be quickly exchanged in the field. Compact, lightweight and reliable, the SSD 1801 driver eliminates the need for fragile super tweeters and is therefore ideally suited for professional, extended-range 2 way systems.

| ELECTRICAL SPECIFICATIONS: | | |
|---|---|---|
| [1] Max. Amplifier Power | 120W w/x-over at 6 kHz | |
| (Cont. Program) | 90W | 1.6 kHz |
| Min. Crossover Slope | 40W | 1 kHz |
| 12 dB/octave | 15W | 0.5 kHz |
| Max. Power Handling | 40W (RMS) above 2 kHz | |
| [1] Power Compression | <1 db, 1W to 40W, 2h | |
| [2] Temp. Rise Coil | 98 °C | (208 °F) |
| Magnet Ass'bly | 4 °C | (39°F) |
| [1] Low Freq. Limit | .5 kHz | |
| [1] Frequency Response | .5 kHz to 22 kHz | |
| Sensitivity (Horn Q = 10) | 107 dB (1W, 1m, 2 kHz) | |
| (1" Plane Wave Tube) | 115 dB (1mW, 2kHz) | |
| [1] Efficiency (1 kHz/2 kHz) | 17.5% / 16% | |
| [1] Harmonic Distortion 2nd | ≤ 1.5% (4W), ≤ 2% (10W) | |
| 3rd | ≤1 % (4W), ≤.5% (10W) | |
| [1] IM-Distortion +2 | ≤1 % (4W) | |
| +3 | ≤.5 % (4W) | |

| | |
|---|---|
| Magnetic Field | 1.4 Tesla (14000 Gauss) ± 5% |
| Voice Coil DC Resistance | 5/12 ohm ± 10% (25 °C) |
| [1] Nominal AC Impedance | 8/16 ohm ± 15% (25 °C) |
| [1] Minimum AC Impedance | 7/14 ohm ± 15% (25 °C) |
| Polarity (Pos. Pressure Out) | Plus Voltage To Red Terminal |
| **MECHANICAL SPECIFICATIONS:** | |
| Diaphragm Displacement Limit | .71 mm (.028") |
| Throat Diameter | 2.54 cm (1") |
| Overall Dimensions (Mounted) | 12.7 cm (5") dia., 4.76 cm (1 7/8") deep |
| [3] Mounting | Two ¼"-20 THD Studs, 180° on 7.62 cm (3") diameter |
| Diaphragm Assembly Model | CD 1801-8/16 Self Aligning |
| Diaphragm Material | Special Heat Treated Alu. Alloy |
| Effective Diameter | 4.57 cm (1.8") |
| Compliance | Bi-laminate, Polyamide/Aluminum |
| Terminations | Spade Lugs .63 cm (¼") |
| Coil Material | Copper Clad, Alu. Ribbon Wire |
| Net/Shipping Weight | 2 kg (4.4 lbs.)/2.3 kg (5 lbs.) |

1. See applicable graphs on other side of page for detail.
2. Temperature rise measured after 2 hour power test with 40W of pink noise (bandwidth limited from 2 kHz to 20 kHz, 2:1 peak to RMS voltage level). Ambient temperature 25 °C (77 °).
3. Mounting: Standard 1" throat
   Flange Mount

## Architects and Engineers Specifications

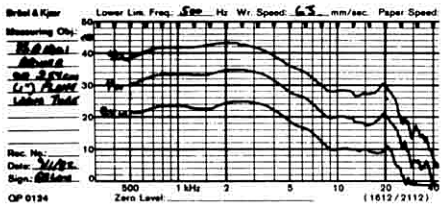
The high frequency compression driver shall be the Renkus-Heinz Model SSD 1801 or approved equal. When mounted to a suitable horn, the driver shall sustain a minimum of 40 watts RMS input power (pink noise band limited from 2kHz to 20kHz). Efficiency at 2 kHz shall be no less than 16%. Pressure sensitivity measured with 1 mW RMS input at 2kHz shall be 115 dB SPL when coupled to a 2.54 cm (1") plain wave tube. When coupled to a suitable horn of Q = 10, the pressure sensitivity shall be 107 dB SPL at 2kHz (1 m, 1 watt input). Frequency response shall be smooth from 500 Hz to 22,000 Hz. Nominal impedance shall be 8 or 16 ohm. 2nd order harmonic distortion shall be less than 1.5% with 4 watt input, 3rd order harmonic distortion shall be less than 0.5% with 4 watt input. The coil-diaphragm assembly shall utilize special heat treated aluminum, have bi-laminate suspension, and shall be easily field replaceable without requiring special tools and without requiring alignment. The magnet shall be of ceramic material impervious to demagnetization, and shall be capable of sustaining a continous magnetic field of 14,000 gauss. The driver's throat diameter shall be 2.54 cm (1"). Standard mounting with two 0.63 cm (¼") studs on 7.63 cm (3") diameter 180° apart shall be provided. All required hardware shall be supplied. For increased reliability, the cast aluminum cover shall be integrally designed to act as a heatsink for the coil-diaphragm assembly. The diameter of the driver shall not exceed 12.75 cm (5"). The depth of the driver shall not exceed 4.76 cm (1 7/8"). The net weight of the driver shall not exceed 2 kg. (4.4 lbs.).

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**The following Bruel & Kjaer equipment was used:** 2010 Analyzer, 1902 Distortion Control, 2305 Recorder, 4440 Gating System, 4133 or 4138 Microphone, 2615 Preamp. The Renkus-Heinz soundroom in conjunction with the above equipment is capable of true anechoic measurements down to 350 Hz. The graphs are reproductions of actual, unretouched measurements, except where indicated.

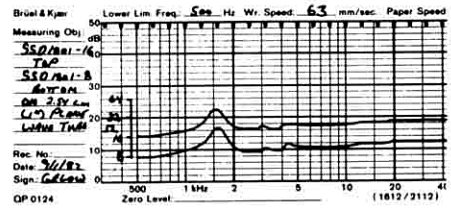
# Measurements on 2.54 cm (1") Diameter Plane Wave Tube

### Frequency Response 0.4 w, 4 w, 40 w.



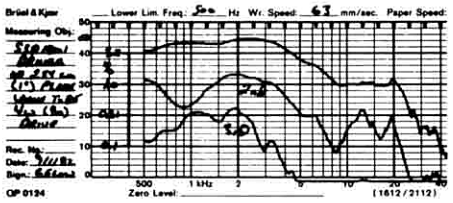
These curves allow accurate prediction of power output with respect to any input. The relatively uniform frequency response up to maximum power rating indicates excellent power linearity and dynamic range. The above plane wave tube curves are also representative of the power response of the driver when coupled to a constant directivity horn.

### AC-Impedance of 8 and 16 ohm drivers

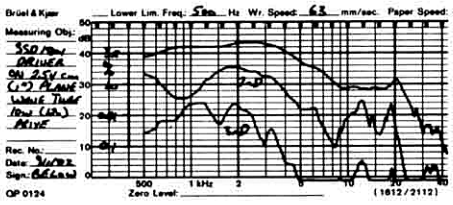


Impedance curves are smooth and show a low Q resonance at 1.6 kHz. Minimum ac-impedance occurs at 3 kHz.Flat slope is due to shorting turn on pole piece to stabilize inductance.

### Harmonic Distortion with 4 w input

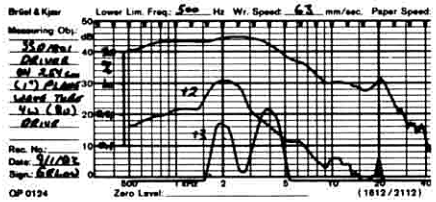


### Harmonic Distortion with 10 w input



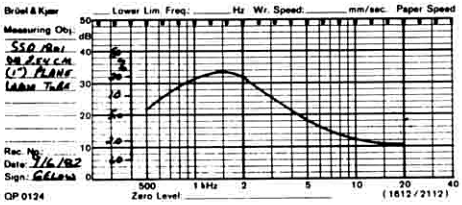
The above curves show 2nd or 3rd harmonic distortion as a function of frequency at two power levels. Note, that both components of harmonic distortion do not increase proportional with input power. This fact, just as the minimal change in frequency response with power is an indication of the drivers ability to reproduce accurately even with very high input power peaks.

### Intermodulation Distortion at 4 w Input



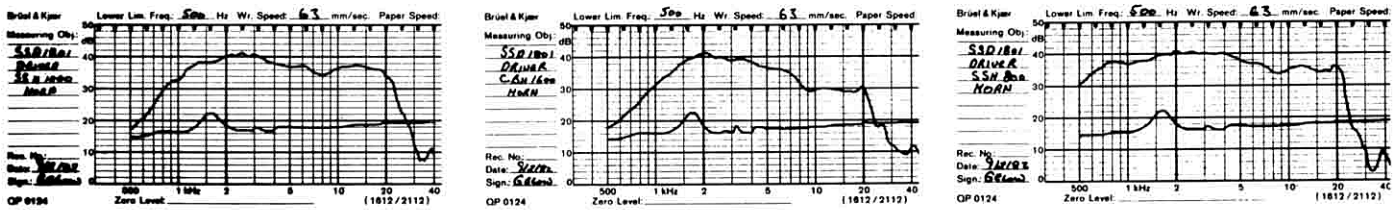
The curves show 2nd ($f_2 + f_1$) and 3rd ($f_2 + 2f_1$) components of a two tone test signal ($f_2 = f_1 + 2$ kHz). This measurement gives an opportunity to describe complex, not harmonically related nonlinearities. Intermodulation distortion is musically much more offensive than harmonic distortion and must be small.

### Efficiency versus Frequency



This calculated curve gives the efficiency of the driver under ideal conditions. Maximum efficiency is indicated at the 1.6 kHz resonance. The pronounced drop-off toward higher frequencies is common to all compression drivers.

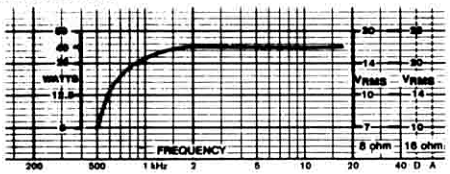
# Measurements on Renkus-Heinz Horns



These measurements were made on axis at a distance of 4' from the horn mouth under anechoic conditions. No equalization was provided. The improvement in high frequency response compared to the plane wave tube measurements is due to the horn characteristics. The ac-impedances are measured with the drivers mounted to the horns.

# Maximum Ratings

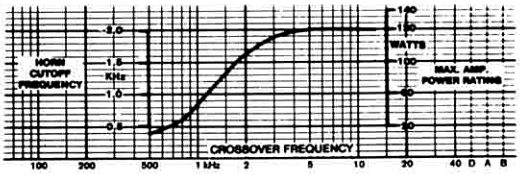
### Maximum Power Handling as a Function of Coil Temperature and Displacement Limits.



This calculated graph indicates maximum allowable steady state sine wave power input of 40 w RMS above 2 kHz. Maximum voltages for 8 ohm and 16 ohm coils are also indicated (17 V and 25 V respectively). Below 2 kHz maximum input power is limited by the available diaphragm displacement as shown. This graph indicates clearly that lower crossover frequencies can be used only with reduced input power.

These maximum limits are important for such applications as high level warning systems and sirens. They also apply for audio systems in acoustic feedback mode.

### Maximum Rated Amplifier Power as Function of Crossover Frequency



In addition to temperature and displacement limits, this graph takes into account the effects of high pass networks on continuous program power passed through to the driver. The left vertical scale represents horn cut-off frequency. Below this frequency, the horn will not load the diaphragm properly and will distort (see above impedance curves on horns). The horizontal frequency scale represents crossover frequencies. The right vertical scale represents rated amplified power (RMS into 8 or 16 ohm). Note, that the scale is for amplifiers operated in the linear region with continuous program material (no clipping or heavy compression). The steady state sine wave limit is 40 watts or less as indicated in the graph to the left.

**To find minimum crossover frequency from horn cut-off, go right to curve then down. To find maximum amplifier power rating, go up from selected crossover frequency, then right to amplifier scale.**