DYNAUDIO®

30 W-54

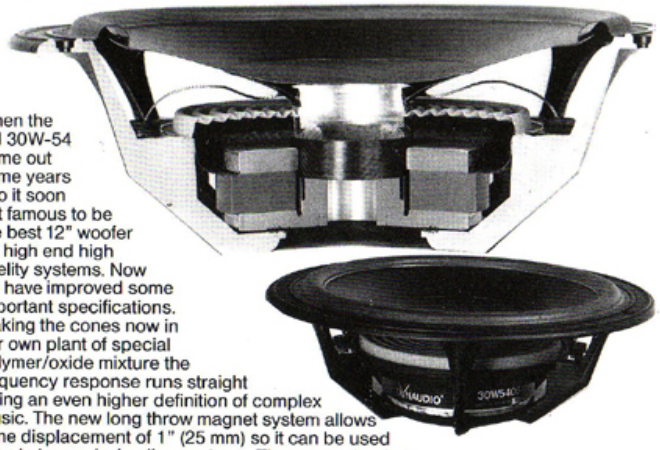
TECHNOLOGY UNLIMITED

APPLICATIONS

12" woofer for
enclosures of 80 to 140 litres
for 3-, 4- and 5way
systems
PHA cone allows
midrange from 800 Hz
transmission line
bassreflex sealed or
aperiodic damped
enclosures

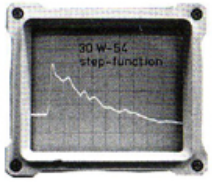
FEATURES

magnesium die cast
basket with aerodynamic ribs
very high power handling
vented long throw magnet system
low distortion
hacacoil technique
PHA-cone material
(phase homogeneous area)
DTL-system
(dynamic transient linearity)
tropic proof
high BL-factor



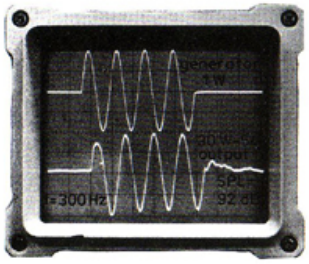
When the old 30W-54 came out some years ago it soon got famous to be the best 12" woofer for high end high fidelity systems. Now we have improved some important specifications. Making the cones now in our own plant of special polymer/oxide mixture the frequency response runs straight giving an even higher definition of complex music. The new long throw magnet system allows cone displacement of 1" (25 mm) so it can be used even in transmission line systems. The proven basket with the aerodynamic ribs integrates the complete vented magnet system. The hexacoil technique allows high power handling and the DTL-system reduces the rise time by the factor 10!

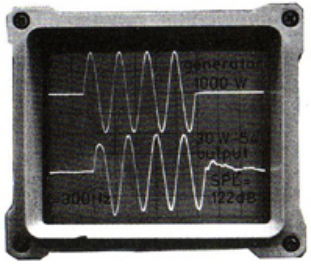
The STEP-FUNCTION of a 12" woofer normally has a slow rise, not much steeper than the dropping due to the heavy weight of big systems. The step function to the right shows the efficency of our pat. DTL-system. The rise time is reduced to 1/10. The copper capsule around the pole piece is extended and acts as a magnetic short circuit to the voice coil. The iron in the pole piece normally creates unlinearites to the voice coil which now is eleminated.



Tone bursts are the best way to obtain an accurate picture of overall acoustic performance. Regrettably they are mostly used only to test rise-time and ringing - which shows much more clearly with a step funktion test! With a tone burst, all the moving parts of a speaker can be loaded without burning the voice coil. With a given frequency the SPL should be 30dB higher at 1000 W input when compared with a 1 W input, if the output is linear. This test shows the driver's ability to reproduce the transients without compression. The right picture shows that even a 1000 W input is not the limit: the dynamic response is absolutely linear. Data given in catalogues (and even test reports) normally are calculated figures and not measured values.

This compression effect is either under-rated or ignored very often. That is why many speakers do not produce SPL's above 100 dB, in spite of higher theoretical specifications. However this test exposes such anomalies between calculations and actual measurements.





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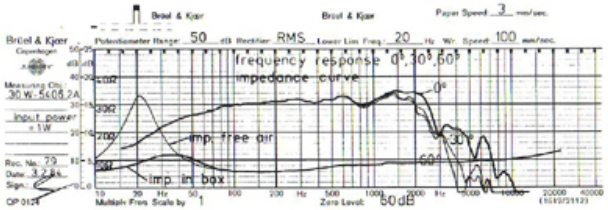
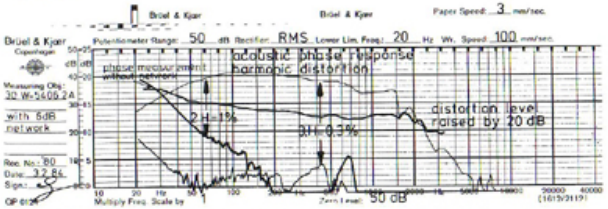
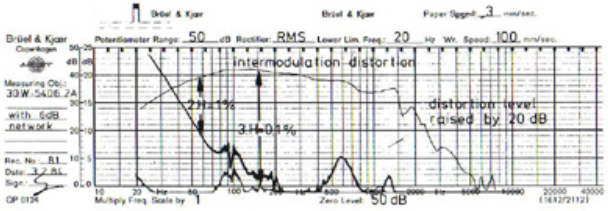
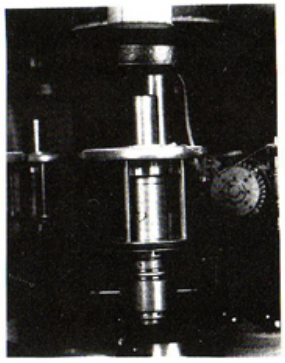


The narrow impedance peak at resonance under free air measurement indicates strong magnetic damping and energy. In enclosure the impedance is flat and balanced.



With a 6d B filter the 30 W-54 is excellent usable up to 1000 Hz. The acoustic phase is linear even beyond that point.





Combining different materials together requires experience and know how about the behavior even under extrem conditions. - Here we glue aluminium former to the fabric spider. An exact amount of high temperature resistant glue is precisely placed to the spiders neck. The voice coil of the woofer survives temperature peaks of even 400 to 650° F (300-400° C). Furthermore the connection point has to withstand accelerations of some hundred miles/h altering the direction some thousand times per second.

Compliance:		
suspension	C_{ms}	$1{,}15 \cdot 10^{-3}$ m/N
acoustic	C_{as}	$1{,}85 \cdot 10^{-6}$ m⁵/N
equivalent volume	V_{as}	257 l
Cone:		
eff. cone area	S_D	400 cm²
moving mass	M_{ms}	41,6 g
lin. volume displacement	V_d	280 cm³
mech. resistance	R_{ms}	2,5 kg/s
lin. excursion P–P	X_{max}	7 mm
max. excursion P–P		25 mm
*Frequency response:		30–3000 Hz
Harmonic distortion:		< 1,5 %
Intermodulation distortion:		< 1 %
Magnetsystem:		
total gap flux		1490 µ Wb
flux density		0,91 Tesla
gap energy		849,4 mWs
force factor	B x L	9,44 Tm
air gap volume	V_g	2,57 cm³
air gap height		10 mm
air gap width		1,55 mm
Net weight:		2,9 kg

Overall dimensions:		300 x 104,5 mm
Power handling:		
*nominal	DIN	210 W
*music	DIN	350 W
transient	10 ms	1000 W
Q-factor:		
mechanical	Q_{ms}	2,39
electrical	Q_{es}	0,42
total	Q_{ts}	0,357
Resonance frequency free air:	f_s	22 Hz
Sensitivity:	IW/Im	92 dB
Voice coil:		
diameter	d	54 mm
length	h	17 mm
layers	n	2
inductance (1 kHz)	L_e	0,25 mH
nom. impedance	Z_{vc}	8 Ω
min. impedance	Z_{min}	6,4 Ω
DC resistance	R_e	6,25 Ω

Data given are as after 30 hours of running

*Depends on cabinet construction

* Thiele/Small parameters are measured not statically but dynamically.