The HQ-5090-SE is the "beast" under the toroidal single ended output transformers. It can handle 90 Watt. The application can go to a primary 5 kOhm with secondary 0-2-4-8 Ohm for two 211 of 845 triodes in parallel. But also the primary 10 kOhm impedance with secondary 0-4-8-16 Ohms is possible with a single CV4 of 845 or ..... This 10kOhms application gives the lowest distortion with a single power triode, and also here the micro detail reproduction is of striking quality. Reaching for the best? The HQ-5090 is the answer.

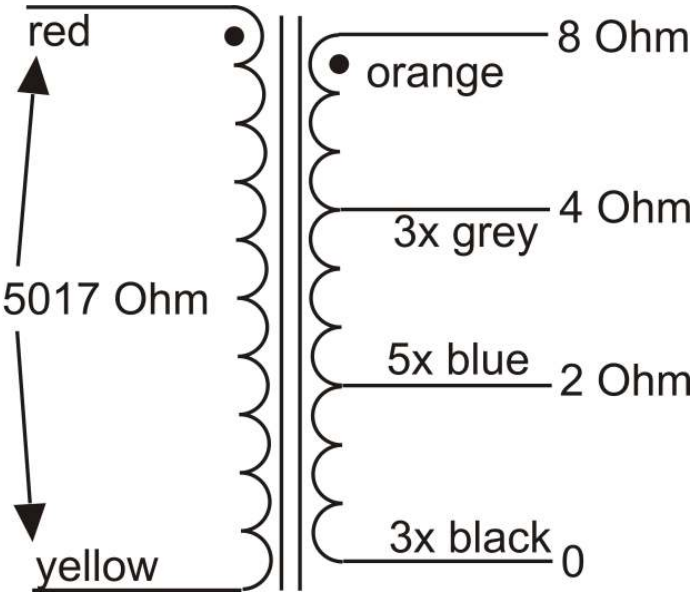
Transformer is potted in aluminium black shell.

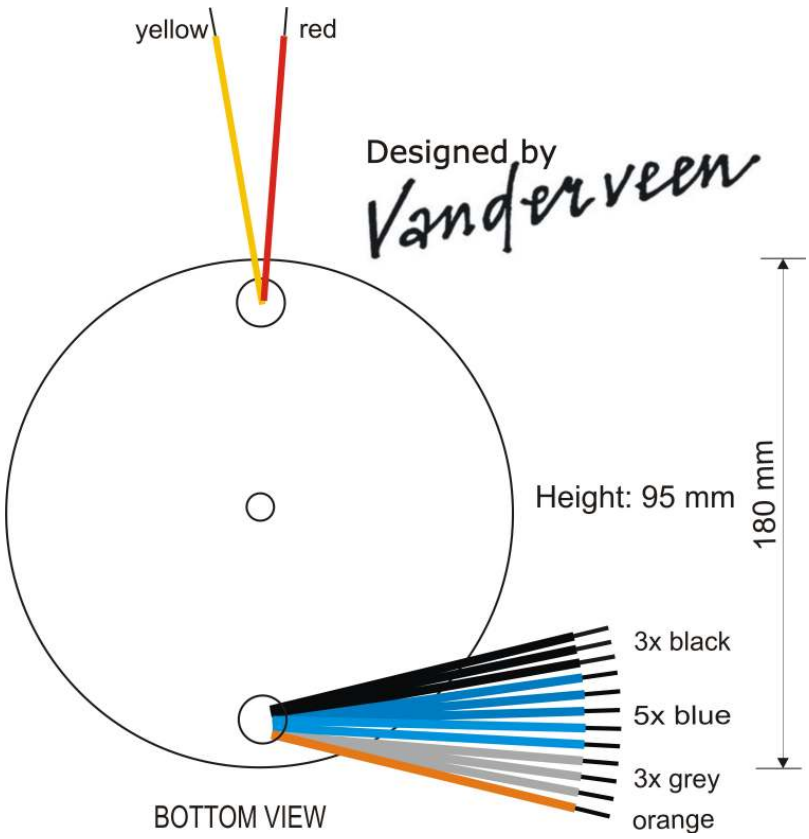
dimensions: 180mm x 95mm.

weight: 9,5 Kg.

price: 442€

technical data:





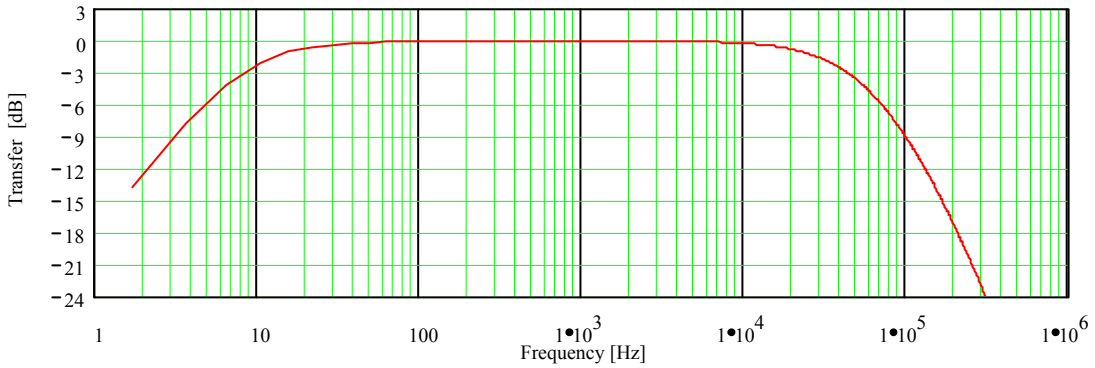
HQ-5090-SE SINGLE ENDED OUTPUT TRANSFORMER

TYPE & APPLICATION :		VDV-HQ-5090-SE: 211 & equivalents	
Primary Impedance :		$Raa = 5.017$	[kΩ]
Secondary Impedance :		$Rls = 4$	[Ω]
Turns Ratio Np/Ns :		$Ratio = 35.415$	[ ]
-.1 dB Frequency Range [Hz] - [kHz] :		$flf = 37.287$	$fhf = 10.195$
-1 dB Frequency Range [Hz] - [kHz] :		$fl1 = 15.904$	$fh1 = 22.975$
-3 dB Frequency Range [Hz] - [kHz] :		$fl3 = 8.094$	$fh3 = 43.791$
Nominal Power (1) :		$Pn = 90$	[W]
Full Power Bandwidth Starting at :		$fPnom = 28$	[Hz]
Total Primary Inductance (2) :		$Lp = 32$	[H]
Primary Leakage Inductance to sec. :		$lsp = 28$	[mH]
Effective Primary Capacitance :		$Cip = 0.44$	[nF]
Saturation Primary Current :		$2 \cdot Idc = 378.838$	[mA]
Total Primary DC Resistance :		$Rip = 88.3$	[Ω]
Total Secondary DC Resistance :		$Ris = 0.072$	[Ω]
Tubes Plate Resistance :		$rp = 2.3$	[kΩ]
Insertion Loss :		$Iloss = 0.152$	[dB]
Q-factor 2-nd order HF roll-of (5) :		$Q = 0.438$	[ ]
HF roll-off Specific Frequency (5) :		$Fo = 81.856$	[kHz]
Quality Factor = Lp/Lsp (5) :		$QF = 1.143 \cdot 10^3$	[ ]
Quality Decade Factor (5) :		$QDF = 3.058$	[ ]
Tuning Factor (5) :		$TF = 4.734$	[ ]
Tuning Decade Factor (5) :		$TDF = 0.675$	[ ]
Frequency Decade Factor (4,5) :		$FDF = 3.733$	[ ]

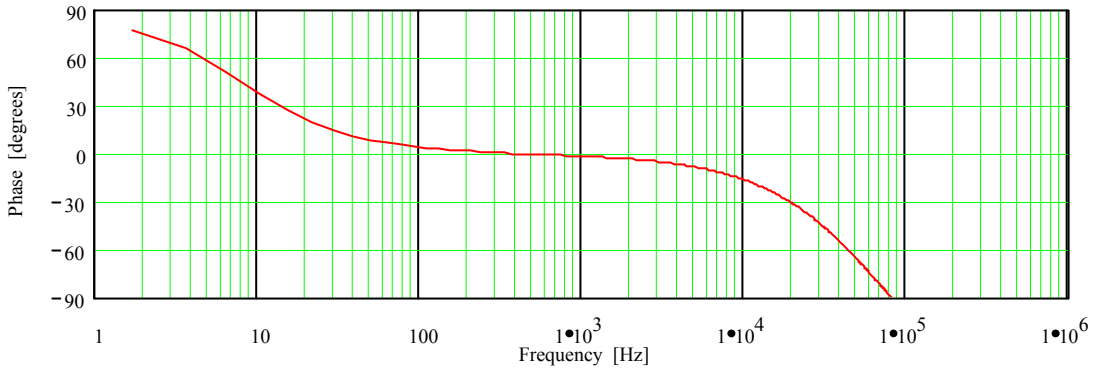
(1): calculated and measured under the conditions of applying 0.5*Idc-sat.
(2): 230 Volt 50 Hz measurement over the total primary winding
(3): calculated and measured at 1 Watt in Rls; ri and Rls are pure Ohmic
(4): defined as FDF = log(fh3/fl3) = number of frequency decades transfered
(5): ir. Menno van der Veen; Theory and Practise of Wide Bandwidth Toroidal Output Transformers, 97-th AES Convention San Francisco, preprint

HQ-5090-SE SINGLE ENDED OUTPUT TRANSFORMER

[dB] Frequency Response; Vertical: 3 dB/div; Horizontal: 1 Hz to 1 MHz (3)



[degrees] Phase Response; Vertical: 30 deg./div; Horizontal: 1 Hz to 1 MHz



[degrees] Differential Phase Response; vert. 30 deg./div; hor. 1 Hz to 1 MHz
See: W.M.Leach, Differential Time Delay..; JAES sept.89 pp.709-715