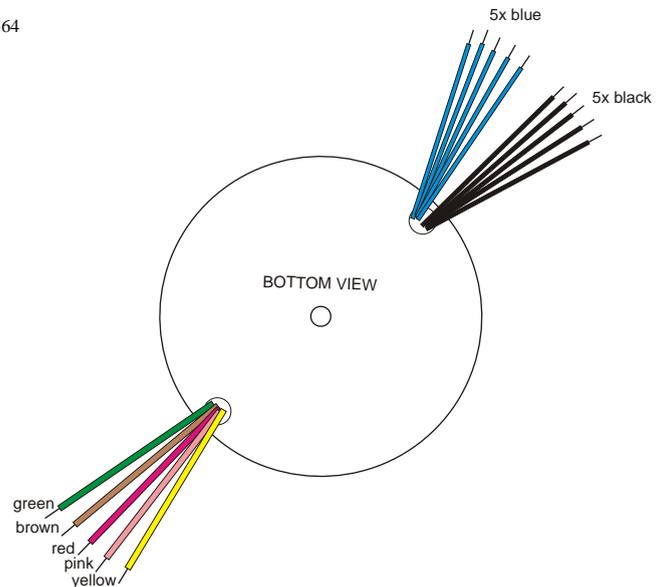


WIDE BANDWIDTH TOROIDAL PUSH-PULL TUBE OUTPUT TRANSFORMER

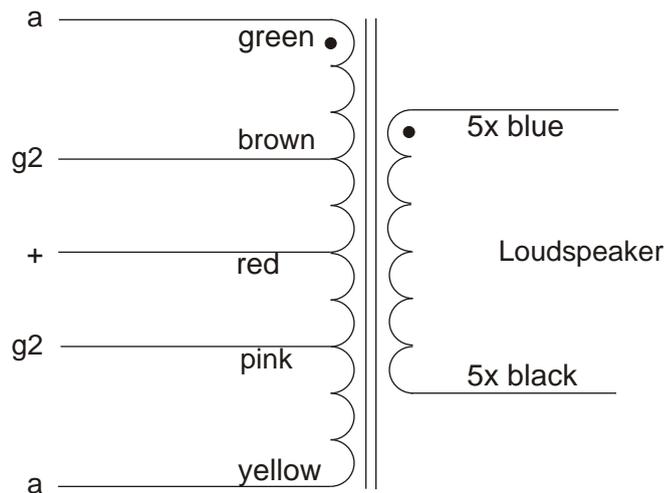
DESIGNED BY  
VANDERVEEN

Type and Application	:	VDV8020PP = PAT4000: 2 x EL84.
Primary Impedance	:	Raa = 8 [k ]
Secondary Impedance	:	Rls = 5 [ ]
Turns Ratio Np/Ns	:	Ratio = 40 [ ]
Ultra Linear Tapping at	:	tap = 33.3 [%]
-1 dB Frequency Range [Hz to kHz] (3):	:	flf = 8.261 fhf = 51.826
-1 dB Frequency Range [Hz to kHz] (3):	:	fl1 = 3.524 fh1 = 89.045
-3 dB Frequency Range [Hz to kHz] (3):	:	fl3 = 1.793 fh3 = 131.564
Nominal Power (1)	:	Pn = 20 [W]
- 3 dB Power Bandwidth starting at	:	fu = 28.5 [Hz]
Total primary Inductance (2)	:	Lp = 485 [H]
Primary Leakage Inductance	:	lsp = 8 [mH]
Effective Primary Capacitance	:	cip = 0.25 [nF]
Total Primary DC Resistance	:	Rip = 155.4 [ ]
Total Secondary DC Resistance	:	Ris = 0.161 [ ]
Tubes Plate Resistance per section	:	ri = 8 [k ]
Insertion Loss	:	lloss = 0.219 [dB]
Q-factor 2nd order HF roll-off (5)	:	Q = 0.671 [ ]
HF roll-off Specific Frequency (5)	:	Fo = 139.013 [kHz]
Quality Factor (5)	:	QF = 6.063·10 <sup>4</sup> [ ]
Quality Decade Factor = log(QF) (5)	:	QDF = 4.783 [ ]
Tuning Factor (5)	:	TF = 1.21 [ ]
Tuning Decade Factor = log(TF) (5)	:	TDF = 0.083 [ ]
Frequency Decade Factor (4,5)	:	FDF = 4.866 [ ]



- (1): calculated under the conditions of balancing the DC-currents and the AC-anode voltages of the powertubes driving the transformer
- (2): maximum value, measured over secondary, transferred to primary
- (3): calculation at 1 mWatt in Rls; ri and Rls are pure Ohmic
- (4): defined as FDF = log(fh3/fl3) = number of frequency decades transferred
- (5): ir. Menno van der Veen; Theory and Practise of Wide Bandwidth Toroidal Output Transformers; preprint 3887, 97th AES Convention San Francisco
- (C): Copyright 1994 Vanderveen; Version 1.7; design date.....

Always connect the five blue wires together  
Always connect the five black wires together  
diameter approx.105mm  
height approx.55mm  
Lead length solid leads approx. 200mm  
fully potted in aluminum black textured shell



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HB

02-03-2003

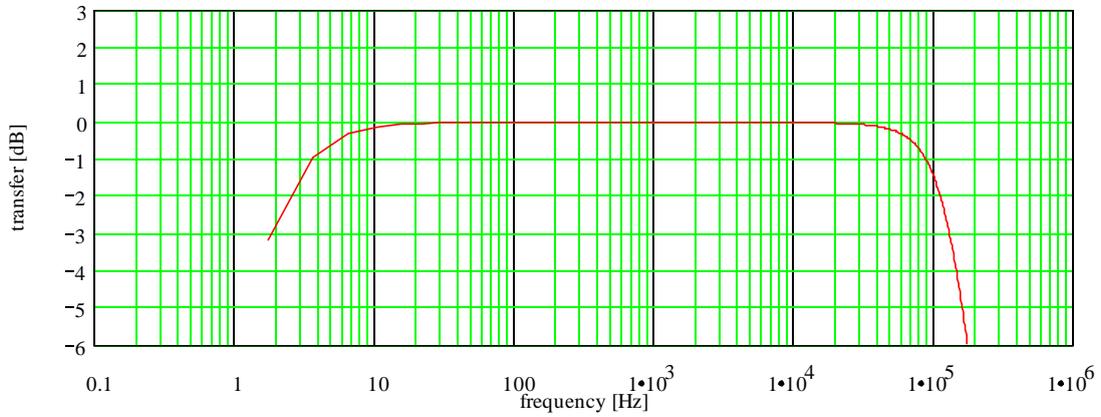
VDV8020PP / PAT 4000

wide bandwidth toroidal  
Push-Pull tube output transformer

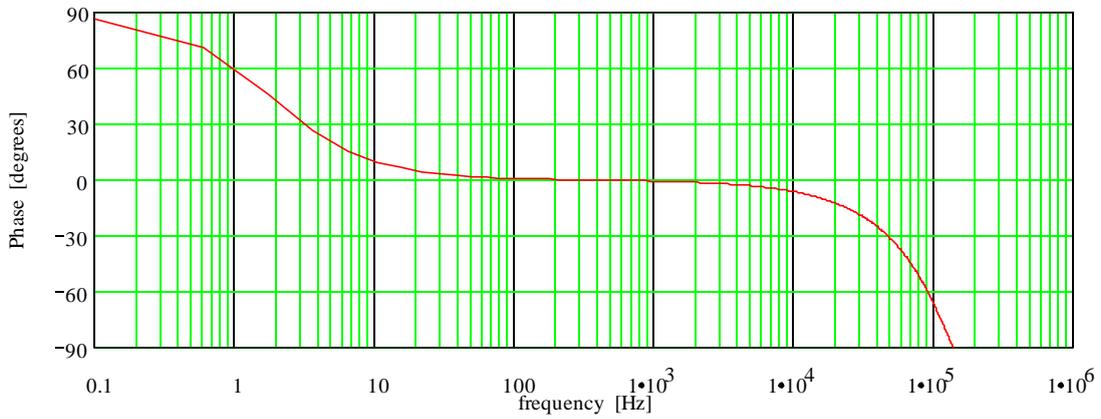
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WIDE BANDWIDTH TOROIDAL PUSH-PULL TUBE OUTPUT TRANSFORMER ; 8020=PAT4000

Frequency Response; Vertical 1 dB/div; Horizontal .1 Hz to 1 MHz (3)



Phase Response; Vertical 30 deg./div; Horizontal .1 Hz to 1 MHz



Differential Phase Distortion; vert. 30 deg./div; hor. .1 Hz to 1 MHz

See: W.M.Leach, Differential Time Delay.; JAES sept.89 pp.709-715

