



The Specialist Range allows tube amplifier designers to go beyond existing technologies. The Specialist Range introduces output transformers for use in amplifiers with sophisticated circuit topologies.

Toroidal Output Transformer for Tube Amplifiers

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PAT-2100-CFB Ratings

Type & Applications	:	PAT-2100-CFB (tested Mar 17, 1998)			
Primary Impedance	:	Raa = 1.995		[k Ω]	
Secondary Impedance	:	Rls = 5		[Ω]	
Turns Ratio Np/Ns	:	Ratio = 19.977		[]	
Ultra Linear Tapping at	:	tap = 33		[%]	
Flat Frequency Range	:	f1f = 1.141	[Hz]->	fhf = 83.91	[kHz]
-1 dB Frequency Range	:	f11 = 0.487	[Hz]->	f11 = 149.547	[kHz]
-3 dB Frequency Range	:	f13 = 0.248	[Hz]->	f13 = 224.74	[kHz]
Nominal Power (1)	:	Pn = 100		[W]	
-3 dB Power Bandwidth starting at	:	fu = 14		[Hz]	
Total Primary Inductance (2)	:	Lp = 663		[H]	
Primary Leakage Inductance to sec.	:	lsp = 1.4		[mH]	
Effective Primary Capacitance	:	cip = 0.638		[nF]	
Total Primary Resistance	:	Rip = 63		[Ω]	
Total Secondary Resistance	:	Ris = 0.17		[Ω]	
Tube-Resistance per section	:	ri = 1		[k Ω]	
Q-factor 2-nd order HF roll-off	:	Q = 0.66		[] (5)	
HF roll-off Specific Frequency	:	Fo = 241.886		[kHz] (5)	
Quality Factor = Lp/Lsp	:	QF = 4.736 \cdot 10 ⁵		[] (5)	
Quality Decade Factor = log(QF)	:	QDF = 5.675		[] (5)	
Tuning Factor	:	TF = 1.916		[] (5)	
Tuning Decade Factor = log(TF)	:	TDF = 0.282		[] (5)	
Frequency Decade Factor (4)	:	fdf = 5.958		[] (5)	

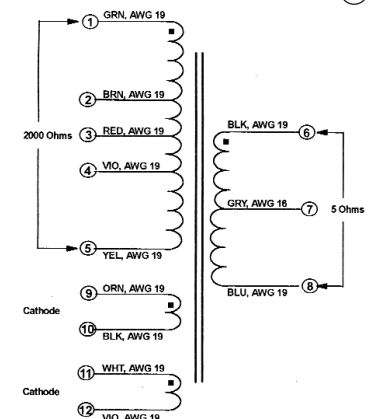
- (1): calculated under the conditions of balancing the DC-currents and the AC-anode voltages of the powertubes driving the transformer
 - (2): 240 Volt 60 Hz measurement over the total primary winding
 - (3): calculation at 1 mWatt in Rls; rl and Rls are pure Ohmic
 - (4): defined as $fdf = \log(fh3/fl3) = \text{number of frequency decades transfered}$
 - (5): ir. Menno van der Veen: Theory and Practise of Wide Bandwidth Toroidal Output Transformers, 97-th AES Convention San Fransico, preprint
- (@): copyright Vanderveen Sept 20 1994, Version 1.5, design date Apr 26, 97

Specialist Range Toroidal Output Transformers



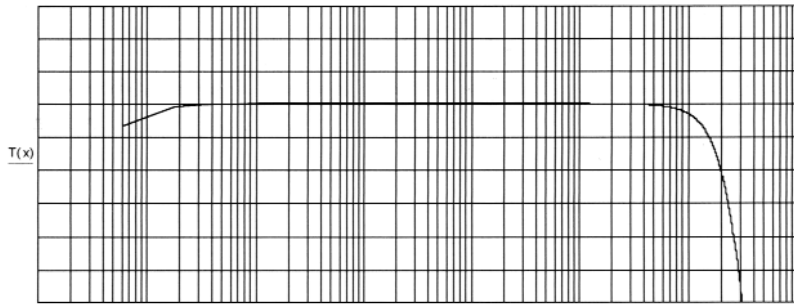
- cathode feedback tape
- 100 watts power
- primary impedance 2000 ohms
- Power bandwidth
14 Hz – 224 kHz (-3 db)

Schematic

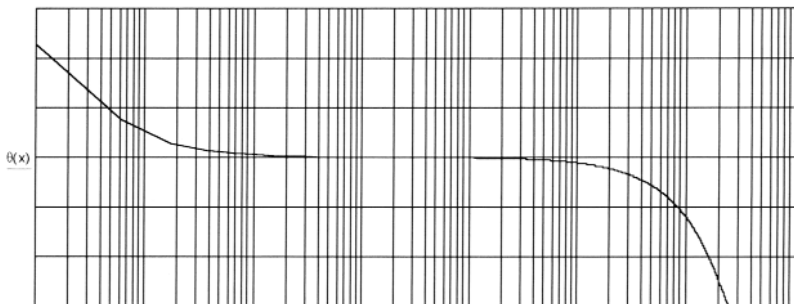


PAT-2100-CFB Response Curves

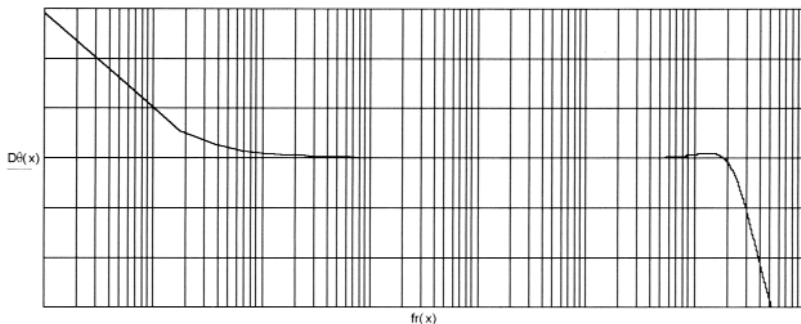
[dB] Frequency Response; Vertical 1 dB/div; Horizontal .1 Hz to 1 MHz (3)



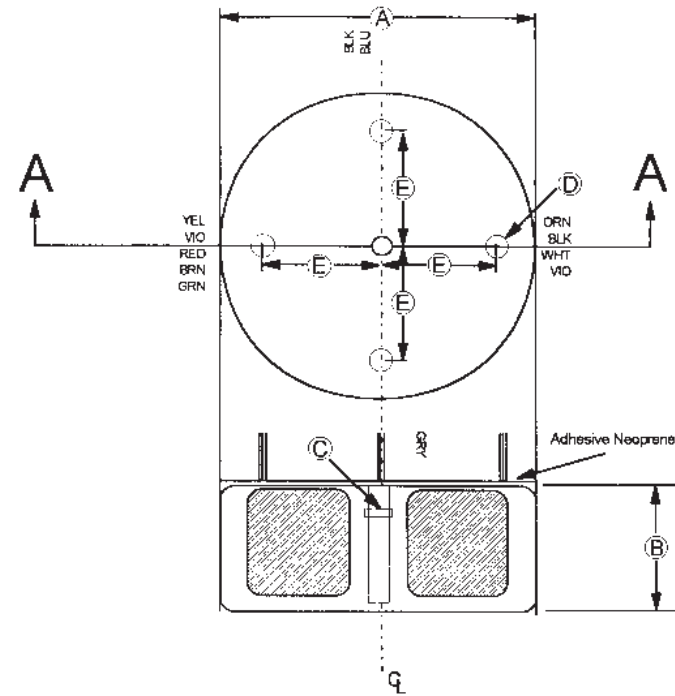
[degrees] Phase Response; Vertical 30 deg./div; Horizontal .1 Hz to 1 MHz



[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



Mechanical



REF	Dimension, in mm
A	152.4 nominal
B	88.9 nominal
C	5/16-18T-NUT
D	16 nominal
E	50 +/- 3

Weight: 6.21kg
Lead Length: 300mm (+/- 10mm)

