



**PAT 4146-00 Application: EL34 150 W**

This 150 Watt high power Push Pull output transformer, with a primary impedance of 2.2 kOhms and a secondary impedance of 8 Ohms with center tap (cathode feedback) and with 43 % Ultra Linear taps, is intended for six EL34 or KT66 or 6L6 tubes at moderately high voltages (between 350 and 450 Volts). The -3dB (1 watt) bandwidth is from 0.6Hz to 118 kHz while the -3dB power bandwidth starts at 15 Hz, allowing this transformer to be used in applications where full and strong bass response is essential.

**Toroidal Output Transformer for Tube Amplifiers**

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**PAT-4146-00 Ratings**

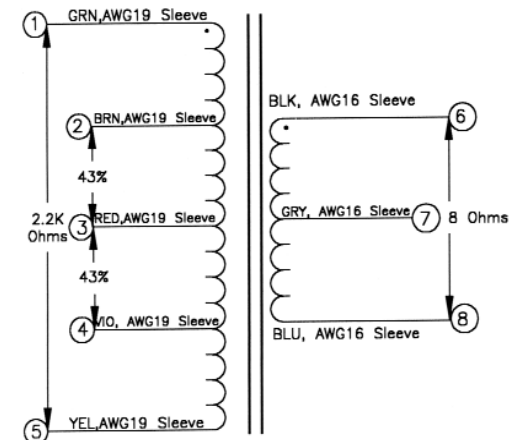
Type & Application	:	Plitron / VDV PAT-4146-00	
Primary Impedance	:	Raa = 2.212	[kΩ]
Secondary Impedance	:	Rls = 8	[Ω]
Turns Ratio Np/Ns	:	Ratio = 16.63	[ ]
Ultra Linear Tapping at	:	tap=43	[%]
-.1 dB Frequency Range [Hz to KHz] <sup>(3)</sup>	:	flf = 2.966	fhf = 30.76
-1 dB Frequency Range [Hz to KHz] <sup>(3)</sup>	:	fl1 = 1.265	fh1 = 67.024
-3 dB Frequency Range [Hz to KHz] <sup>(3)</sup>	:	fl3 = 0.644	fh3 = 118.933
Nominal Power <sup>(1)</sup>	:	Pn = 150	[W]
-3 dB Power Bandwidth starting at	:	fu = 15	[Hz]
Total Primary Inductance <sup>(2)</sup>	:	Lp = 374	[H]
Primary Leakage Inductance	:	lsp = 1.4	[mH]
Effective Primary Capacitance	:	Cip = 1.023	[nF]
Total Primary DC Resistance	:	Rip = 80.6	[Ω]
Total Secondary DC Resistance	:	Ris = 0.258	[Ω]
Tubes Plate Resistance per section	:	ri = 2.2	[kΩ]
Insertion Loss	:	lloss = 0.288	[dB]
Q-factor 2nd order HF roll-off <sup>(5)</sup>	:	Q = 0.542	[ ]
HF roll-off Specific Frequency <sup>(5)</sup>	:	Fo = 164.894	[kHz]
Quality Factor <sup>(5)</sup>	:	QF = 2.671·10 <sup>5</sup>	[ ]
Quality Decade Factor = log(QF) <sup>(5)</sup>	:	QDF = 5.427	[ ]
Tuning Factor <sup>(5)</sup>	:	TF = 0.692	[ ]
Tuning Decade Factor = log(TF) <sup>(5)</sup>	:	TDF = -0.16	[ ]
Frequency Decade Factor <sup>(4,5)</sup>	:	fdf = 5.267	[ ]

- (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, transfered to primary
- (3): calculation at 1 mWatt in Rls; ri 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; preprint 3887, 97th AES Convention San Francisco
- (C): Copyright 1994 Vanderveen; Version 1.7; design date July 2, 1994

**Special Toroidal Output Transformer Designs**

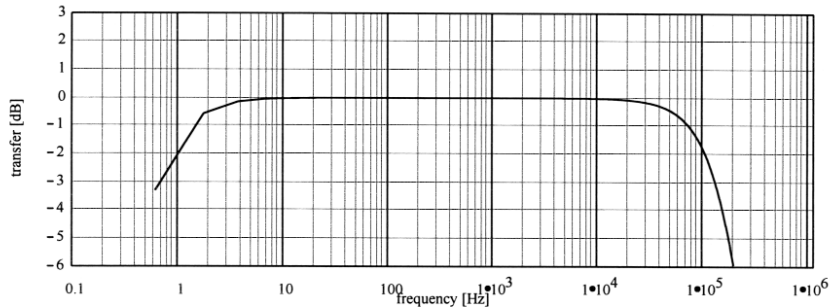


**Schematic**

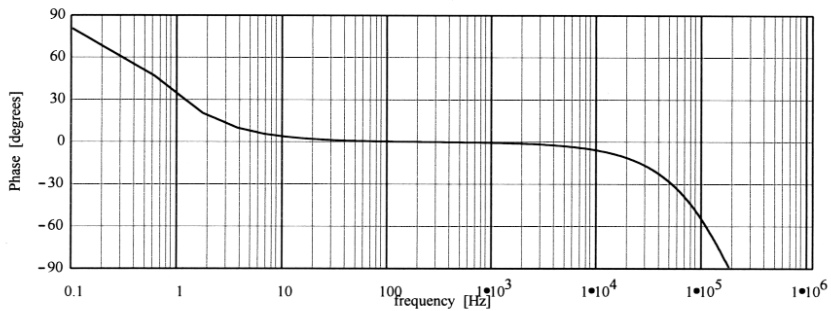


# PAT-4146-00 Response Curves

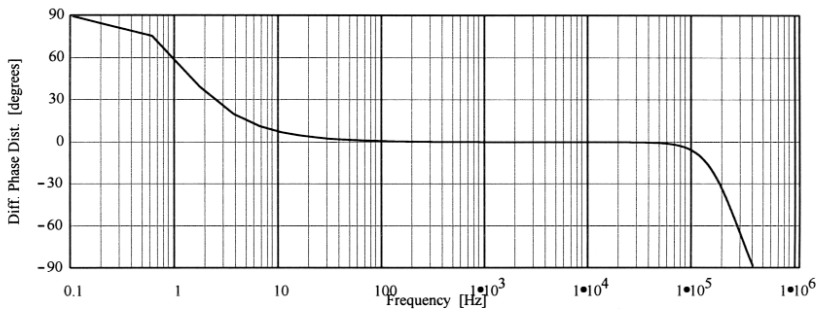
Frequency Response; Vertical 1 dB/div; Horizontal .1 Hz to 1 MHz (3)



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

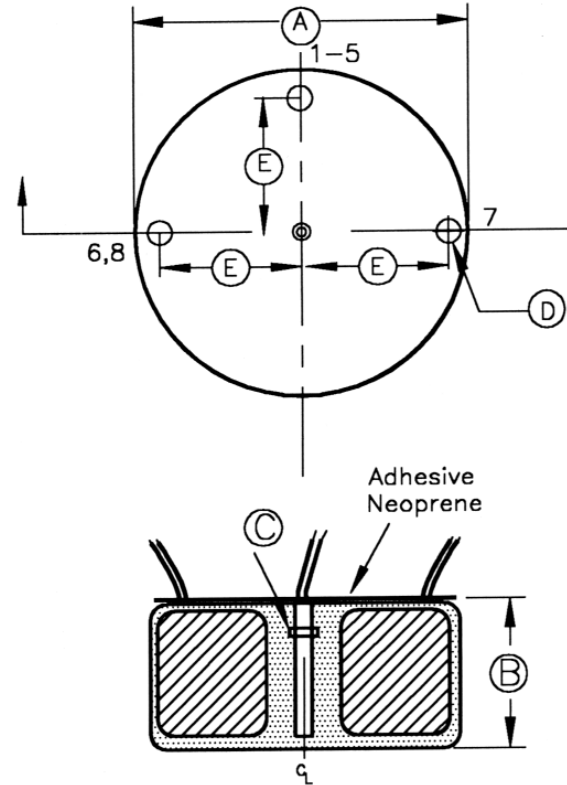


Differential Phase Distortion; vert. 30 deg./div; hor. .1 Hz to 1 MHz  
See: W.M.Leach, Differential Time Delay.; JAES sept.89 pp.709-715



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# Mechanical



REF	Dimension, in mm
A	152.0 nominal
B	89.0 nominal
C	5/16-18T-NUT
D	20.0mm +/- 5mm
E	70.0mm +/- 5mm

Weight: 6.0kg  
Lead Length: 200mm (+/- 10mm)

