

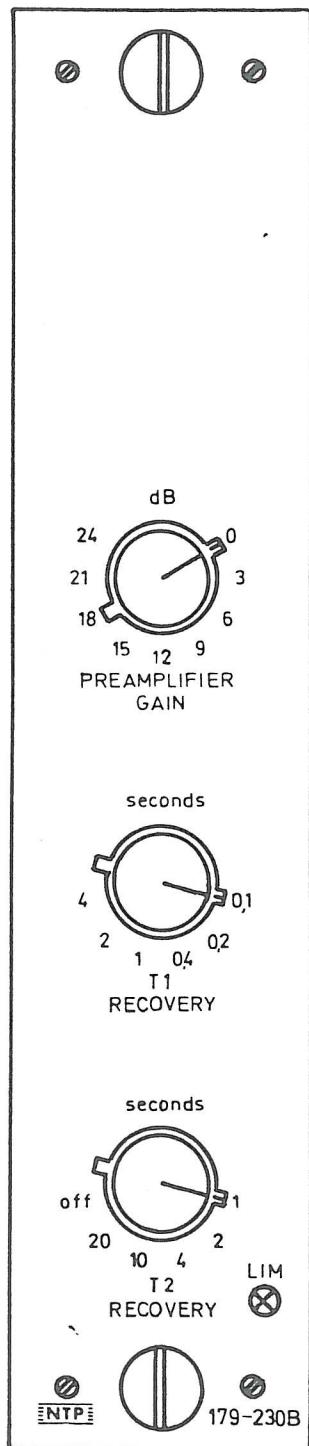


Limiter Amplifier 179-230 B

Contents:

Draw. No.:

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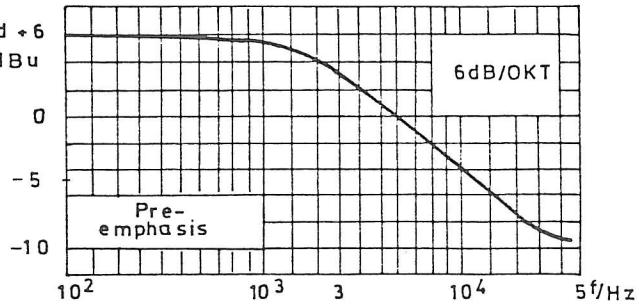
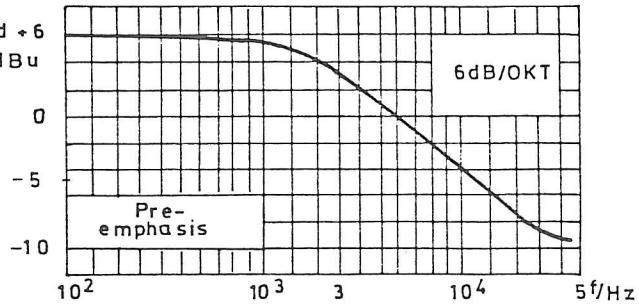


Pos.:	Antal:	Materiale:	Behandl.	Del af
Mälestok :				
Tolerance : \pm	mm			
Tegnet :	8-11-76 TL	Limiter Amplifier 179-230B		
Godkendt:		Frontplate Lay -out		
Revideret:				
				NTP NTP ELEKTRONIK A/S
				179-2309-B-4

Supply Voltage	:	24 V dc $\pm 10\%$
Maximum Ripple Voltage	:	0,1 V pp
Current Consumption, steady state	:	appr. 75 mA
Current Consumption, during heat-up	:	200 mA
Temperature Range	:	-20°C to +60°C (-40°F to +140°F)
Frequency Response	:	$\pm 0,5$ dB 20 Hz to 20 kHz
Input Impedance 20 Hz to 20 kHz	:	22 kOhms $\pm 10\%$ floating
Output Impedance 20 Hz to 20 kHz	:	20 Ohms floating
Input Overload level	:	+21 dBu (8,6 V rms)
Minimum load	:	200 Ohms
Basic Amplification	:	6dB $\pm 0,5$ dB
Preamplification	:	0 to 24 dB in 3 dB steps
Limiting threshold, ref. to output	:	+12dBu (3.1Vrms) $\pm 0,5$ dB ¹⁾
Limiting Range	:	max.30 dB
Distortion 20 Hz to 20 kHz	:	0 to 20 dB lim. 0,3%
Steady conditions	:	20 to 30 dB lim. 0,5%
Attack Time	:	1,5 msec. ¹⁾
Recovery Time T1	:	0,1-0,2-0,4-1-2-4 sec.
Recovery Time T2	:	1-2-4-10-20 off sec.
Control Voltage in- and output (Instr.etc.)	:	1 V/5 dB ref. to pin 5 ²⁾
Signal to Noise Ratio at lim. threshold	:	86 dB A-curve
Standard colour	:	Dull black
Connector	:	Tuchel T 2700
Mechanical Outlines	:	see drawing

Pre-emphasis: 50 μ sec. (normally not connected)

Limiting
Threshold + 6

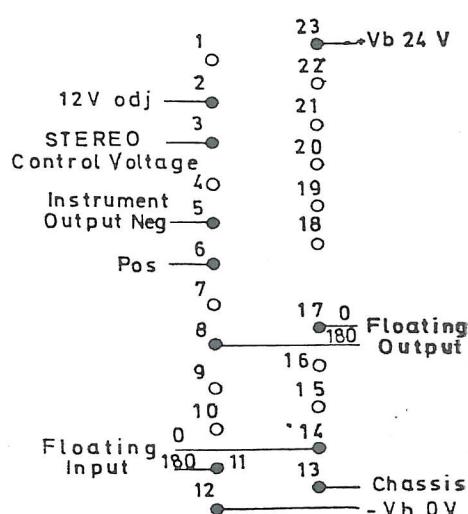
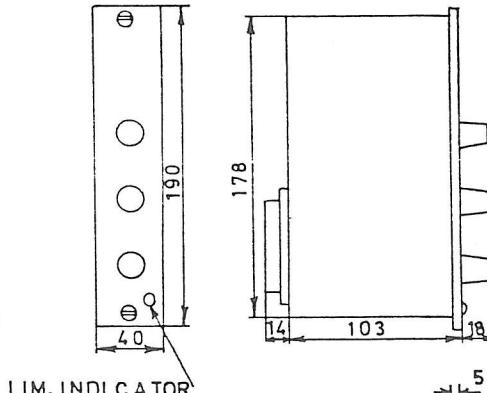


- 1.) The attack time is combined with a full-wave logarithmic clipping circuit. The limiting threshold stated above applies to steady state conditions. Peaks shorter than 1,5 msec. will be limited at a level max. 3 dB above steady state conditions.

2.) Stereo Operation:

The Control Voltage of two units may be linked so as to obtain equal gain reduction in the two stereo channels. By cutting the connection between the two terminals L and M it is possible to apply an external control voltage to pin 3 giving a gain reduction of 5 dB per Volt up to 30 dB reduction.

Specifications subject to change.





Normally the Limiter Amplifier will stay correctly adjusted, except when a component has failed and has been replaced; then it may be necessary to make certain adjustments. Before attempting to make any adjustments, note the permissible indication errors stated in Technical Specifications.

The function of the trimpotentiometers are as follows:

P2 Compensates for individual pinch-off the FET (Q1)
P3 Compensates for individual slope R_{SD} of the FET.

V_{GD}

P4 Linearity adjustment of the FET Attenuator circuit.
P5 Adjustments for minimum distortion of the FET Attenuator.

Do not attempt to make any adjustments until the current consumption has fallen to a steady level approx. 75 mA after 60 sec. Correct sequence of adjustments is as follows:

A. Pinch-off adjustment of P2

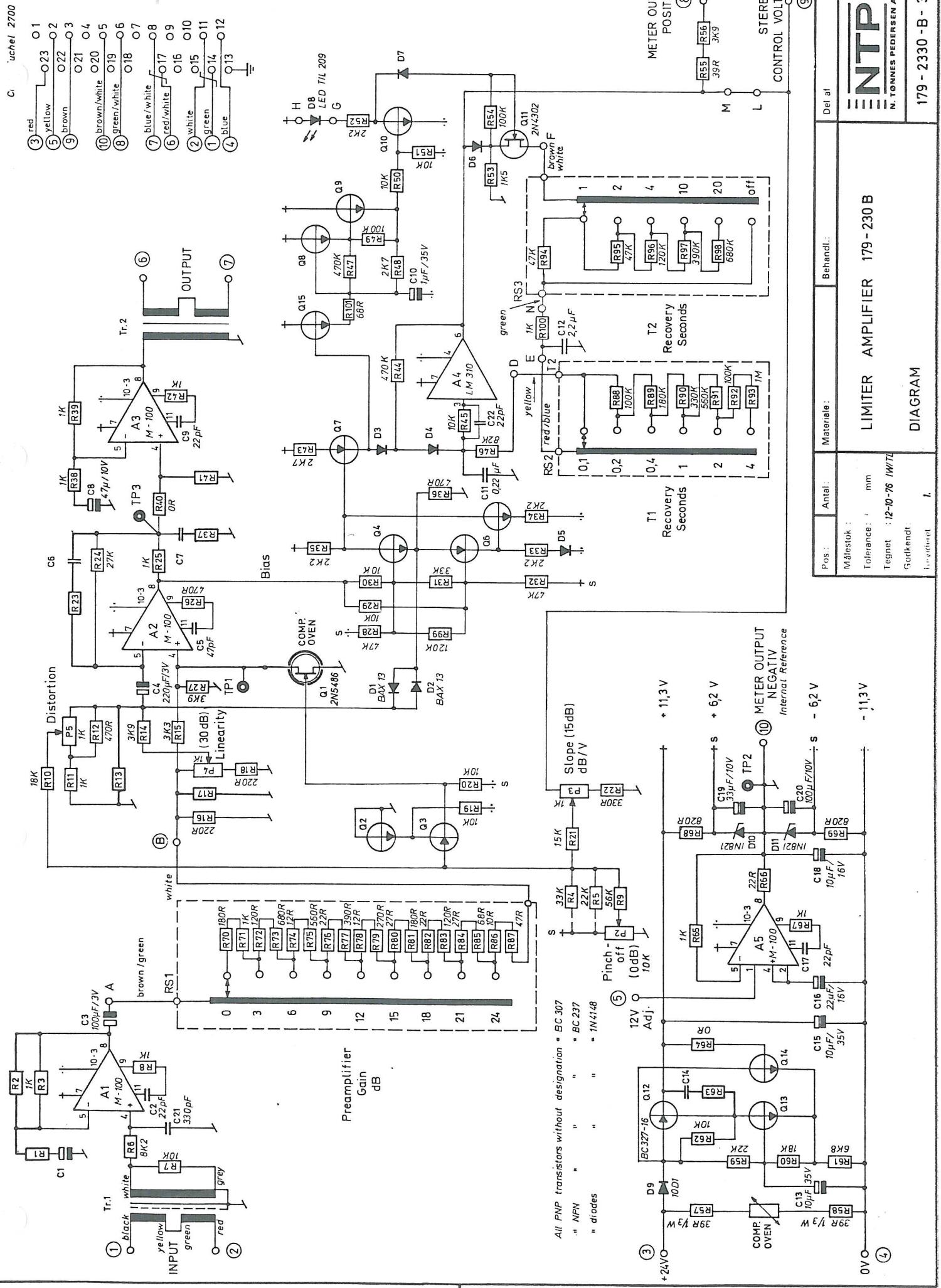
Conditions: Input signal +6 dBu 1 kHz
P2 is adjusted until the output voltage is +12 dBu (6 dB amplification).
The adjustment range can be altered by connecting or disconnecting R4 and / or R5.

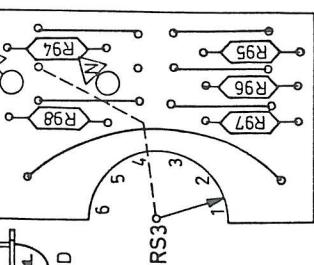
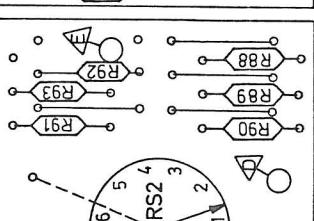
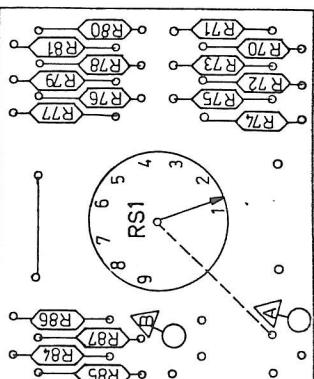
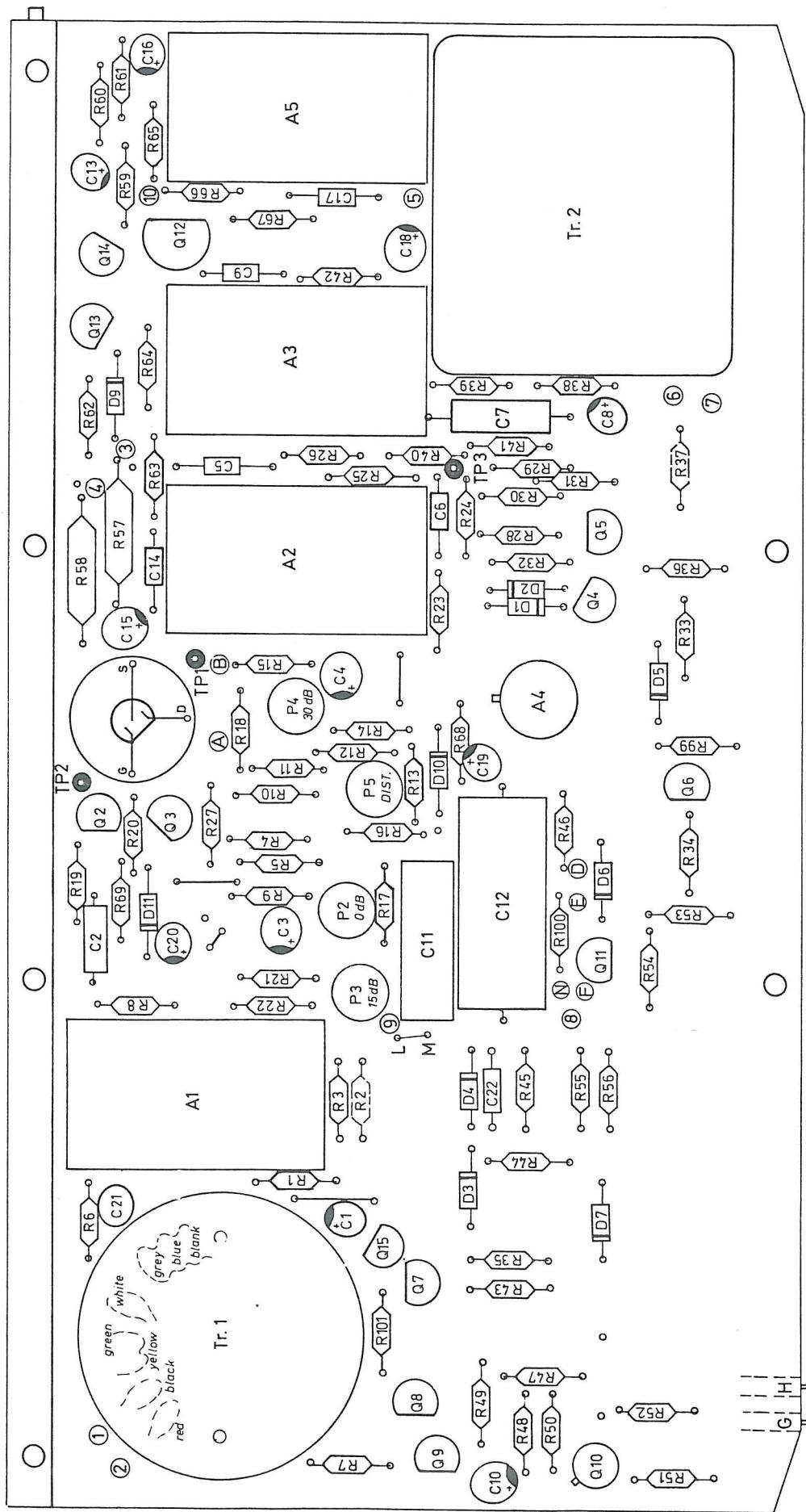
B. Slope dB / V and Linearity adjustment of P3 and P4.

Conditions: Like referred under pos. a.
A floating external DC-source 0-6 V is connected between terminal 3 and 5, terminal 3 positive. The DC voltage is set to 3.0 V, and P3 is adjusted so that the output level is -3 dBu (15 dB attenuation). Now the DC voltage is set to 6.0 V, and P4 is adjusted until the output level is -18 dBu (30 dB attenuation). Because of mutual dependence between P3 and P4 the adjustments are repeated until output level is obtained.

C. Distortion adjustment of P5.

Condition: Input signal +16 dBu 1 kHz
P5 is adjusted to minimum distortion.
Because of interaction between P5 and P2, the adjustment mentioned under pos. a might be carried out once more.





Components Layout

LIMITER AMPLIFIER 179 - 230

N. TØNNES PEDERSEN A/S
NTP
179 - 2341 - A - 3

POS. DESIGN. REF.	ANT. QTY	BETEGNELSE/DESCRIPTION					LEV. FABRIKAT	SUPPL. MANUFACT.
R1		Resistor	Not used	"	"	"		
R2		"	"	"	"	"		
R3		"	1k	1/8W	5%		Beyschlag	"
R4		"	33k	"	"			"
R5		"	68k	"	"			"
R6		"	8k2	"	"			"
R7		"	10k	"	"			"
R8		"	1k	"	"			"
R9		"	56k	"	"			"
R10		"	18k	"	"			"
R11		"	1k	"	"			"
R12		"	470R	"	"			"
R13		"	Not used					
R14		"	3k9	"	"			"
R15		"	3k3	"	"			"
R16		"	220R	"	"			"
R17		"	Not used					
R18		"	220R	"	"			"
R19		"	10k	"	"			"
R20		"	10k	"	"			"
R21		"	15k	"	"			"
R22		"	330R	"	"			"
R23		"	Not used					
R24		"	27k	"	"			"
R25		"	1k	"	"			"
R26		"	470R	"	"			"
R27		"	3k9	"	"			"
R28		"	47k	"	"			"
R29		"	10k	"	"			"
R30		"	10k	"	"			"
R31		"	33k	"	"			"
R32		"	47k	"	"			"
R33		"	2k2	"	"			"
R34		"	2k2	"	"			"
R35		"	2k2	"	"			"
R36		"	470R	"	"			"
R37		"	Not used					
R38		"	1k	"	"			"
R39		"	1k	"	"			"
R40		"	Strap					
R41		"	Not used					
R42		"	1k	"	"			"
R43		"	2k7	"	"			"
R44		"	470k	"	"			"
R45		"	10k	"	"			"
R46		"	82k	"	"			"
R47		"	470k	"	"			"
R48		"	2k7	"	"			"

ORR:



Limiter amplifier 179-230B

STYKLISTE/PARTS LIST

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No.: 179-2331-B-4

POS. DESIGN. REF.	ANT. /QTY	BETEGNELSE/DESCRIPTION				LEV. FABRIKAT	SUPPL. MANUFACT.
R49		Resistor	100k	1/8W	5%	Beyschlag	
R50	"		10k	"	"	"	
R51	"		10k	"	"	"	
R52	"		2k2	"	"	"	
R53	"		1k5	"	"	"	
R54	"		100k	"	"	"	
R55	"		39R	"	"	"	
R56	"		3k9	"	"	"	
R57		"	39R	1/3W	"	"	
R58	"		39R	"	"	"	
R59	"		22k	1/8W	"	"	
R60	"		18k	"	"	"	
R61	"		6k8	"	"	"	
R62	"		10k	"	"	"	
R63	"		Not used				
R64	"		Strap				
R65	"		1k	"	"	"	
R66		"	22R	"	"	"	
R67		"	1k	"	"	"	
R68		"	820R	"	"	"	
R69		"	820R	"	"	"	
R70		"	180R	"	"	"	
R71		"	1k	"	"	"	
R72		"	120R	"	"	"	
R73		"	680R	"	"	"	
R74		"	12R	"	"	"	
R75		"	560R	"	"	"	
R76		"	22R	"	"	"	
R77		"	390R	"	"	"	
R78		"	12R	"	"	"	
R79		"	270R	"	"	"	
R80		"	27R	"	"	"	
R81		"	180R	"	"	"	
R82		"	22R	"	"	"	
R83		"	120R	"	"	"	
R84		"	27R	"	"	"	
R85		"	68R	"	"	"	
R86		"	10R	"	"	"	
R87		"	47R	"	"	"	
R88		"	100k	"	"	"	
R89		"	180k	"	"	"	
R90		"	330k	"	"	"	
R91		"	560k	"	"	"	
R92		"	100k	"	"	"	
R93		"	1M	"	"	"	
R94		"	47k	"	"	"	
R95		"	47k	"	"	"	
R96		"	120k	"	"	"	

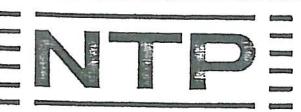


Limiter amplifier 179-230B

STYKLISTE/PARTS LIST

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No.: 179-2331-B-4

POS. DESIGN. REF.	ANT. QTY	BETEGNELSE/DESCRIPTION					LEV. FABRIKAT	SUPPL. MANUFACT.
R97		Resistor	390k	1/8W	5%		Beyschlag	
R98		"	680k	"	"		"	
R99		"	120k	"	"		"	
R100		"	1k	"	"		"	
R101		"	68R	"	"		"	
C1		Capacitor	Not used					
C2		" , ceramic		22pF	100V		Philips	
C3		" , tantalum		100uF	3V		ERO	
C4		" , "		220uF	3V		"	
C5		" , ceramic		47pF	100V		Philips	
C6		"	Not used					
C7		"	" "					
C8		" , tantalum		47uF	6V		ERO	
C9		" , ceramic		22pF	100V		Philips	
C10		" , tantalum		1uF	35V		ERO	
C11		" , polyester		0,22uF	250V		Siemens	
C12		" , "		2,2uF	100V		ERO	
C13		" , tantalum		10uF	35V		"	
C14		"	Not used					
C15		" , tantalum		10uF	35V		ERO	
C16		" , "		22uF	16V		"	
C17		" , ceramic		22pF	100V		Philips	
C18		" , tantalum		10uF	16V		ERO	
C19		"	"	33uF	10V		"	
C20		"	"	100uF	10V		"	
C21		" , ceramic		330pF	100V		Philips	
C22		" , styroflex		22pF	160V		Siemens	
D1	5	Diode	BAX13				Philips	
D2		"	BAX13				"	
D3-D7		"	1N4148					
D8		" , LED	TIL209A				Texas	
D9		"	1N4002					
D10		" , ref.	1N821					
D11		"	1N821					
Q1		FET	2N5486				National	
Q2		Transistor	BC237				Siemens	
Q3		"	BC307				"	
Q4		"	BC237				"	
Q5		"	BC307				"	
Q6		"	BC237				"	
Q7		"	BC307				"	
 NTP ELEKTRONIK A/S		Limiter amplifier 179-230B					STYKLISTE/PARTS LIST	
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POS. DESIGN. REF.	ANT. QTY	BETEGNELSE/DESCRIPTION	LEV. FABRIKAT	SUPPL. MANUFACT.
Q8		Transistor	BC237	Siemens
Q9		"	BC237	"
Q10		"	BC237	"
Q11		FET	2N4302	Amelco
Q12		Transistor	BC327-16	Siemens
Q13		"	BC237	"
Q14		"	BC237	"
Q15		"	BC237	"
A1		Operational amplifier	M100B	NTP
A2		"	M100B	"
A3		" "	M100B	"
A4		" "	LM310AH	Raytheon
A5		" "	M100B	NTP
P2		Trimpot	1.0K	Bourns
P3		"	1k	"
P4		"	1k	"
P5		"	1k	"
Tr1		Transformer	13592/2	JS
Tr2		"	13590	"
1		Component oven	5ST 1-2	Texas
	1	Switch	Mx1/lx9k, T = 12	EBE
	2	"	Mx1/lx6k, T = 12	"
	3	Button	2315403	Ritel
	3	Cap for button	3015011	-" -
	1	Connector	T2700	Tuchel
	1	P.C. Board	179-2340A	NTP
	2	" "	182-900	"
CORR.:				
ISSUED: DATE/SIGN.				
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