



INSTRUCTION MANUAL FOR
LIMITER AMPLIFIER 179-340 / 340B

179-3410-A-4

Limiter Amplifier

179 - 340 and 179-340-B

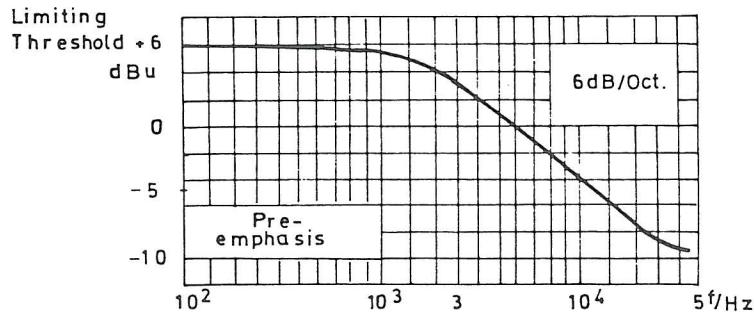
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Draw.no.

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Supply Voltage	:	± 15 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	:	20 kOhms $\pm 15\%$ 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	:	0 to 5 dB
Limiting threshold, ref. to output	:	+6 dBu (1,55 V rms) $\pm 0,5$ dB ¹⁾
Distortion 20 Hz to 20 kHz Steady conditions	:	0 to 20 dB lim. 0,3%
Attack Time	:	1,5 msec. ¹⁾
Recovery Time dual time constants	:	200 msec. open 15 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 dBu Δ f. 23 kHz
Standard colour	:	Dull black
Connector	:	Tuchel T 2700
Mechanical Outlines	:	see drawing

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

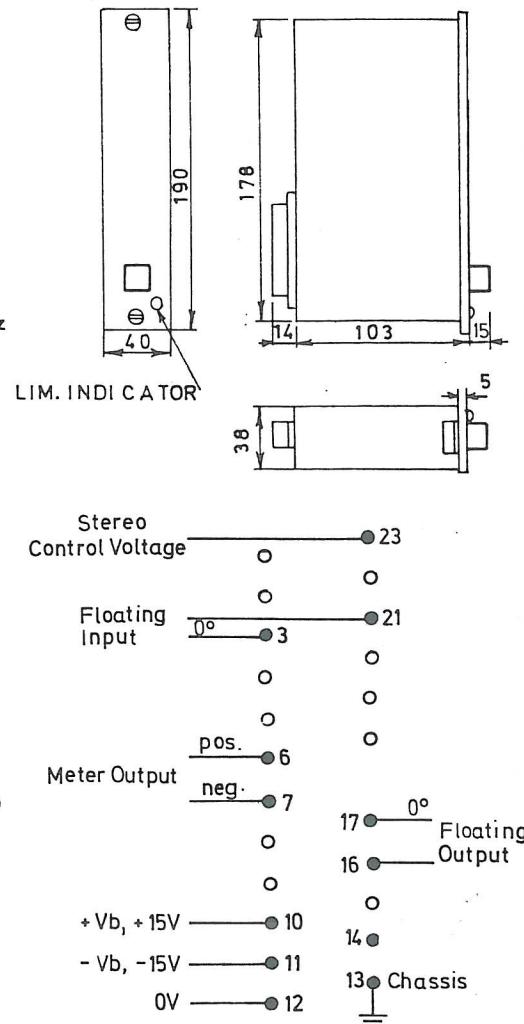


1.) The attack time is combined with a full-wave logarithmic clipping circuit. The limiting threshold stated above applies to steady state conditions. Peaks shorter than 1,5 msec. will be limited at a level max. 3 dB above steady state conditions.

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.



Note: The B-version is without ON-OFF switch.



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 functions of the trimpotentiometers are as follows:

P2 Compensates for individual pinch-off of the F.E.T. (Q1)

P3 Compensates for individual slope $\frac{R_{SD}}{V_{GD}}$ of the F.E.T.

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 app. 75mA after 60 sec. Correct sequence of adjustments is as follows:

a: Pinch-off adjustment of P2

Conditions: Input signal +6dBu 1kHz.

P2 is adjusted until the output voltage is 6dBu (0dB 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.

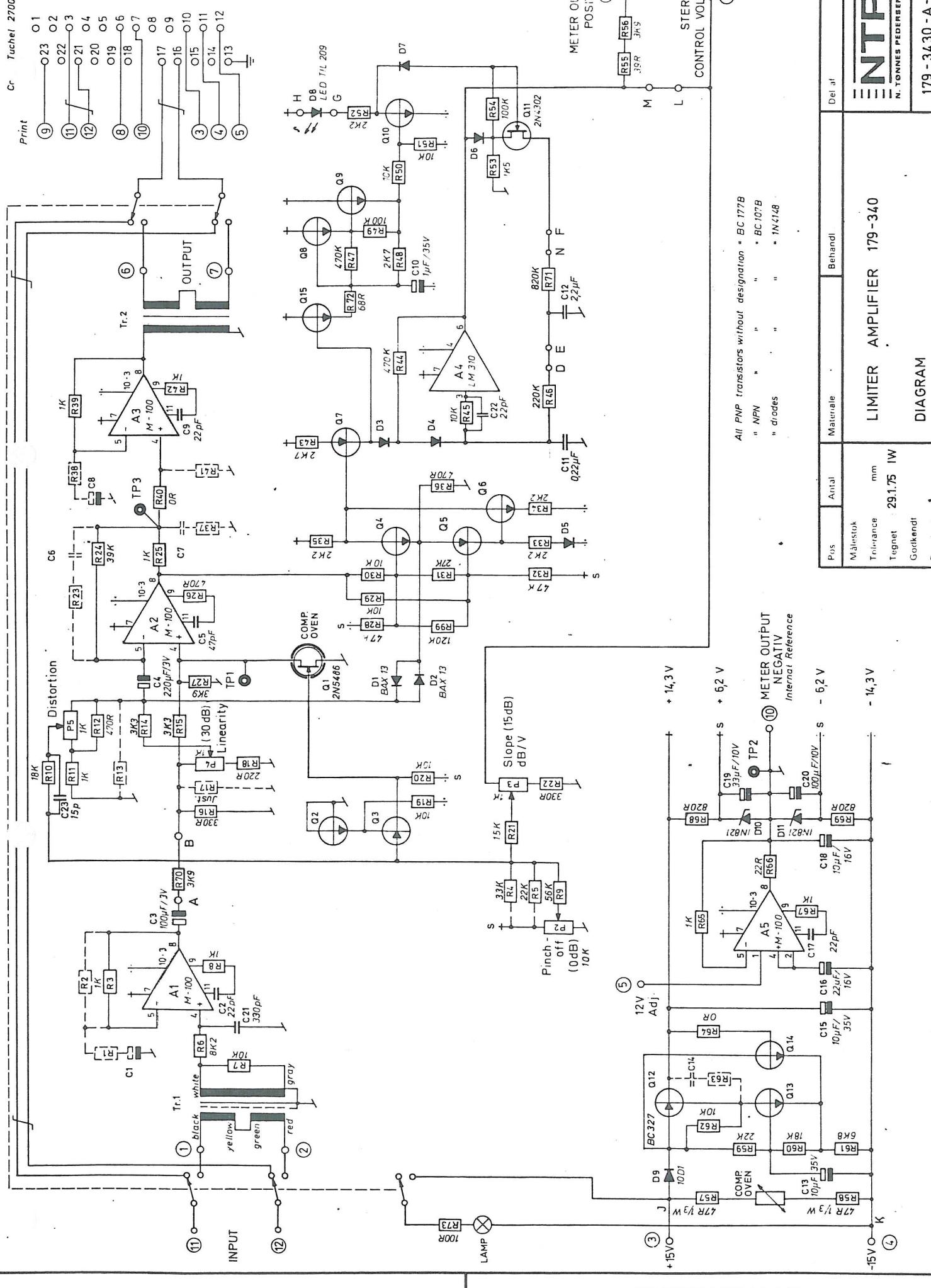
A floating external DC-source 0-6V is connected between terminal 3 and 5, terminal 3 positive. The DC voltage is set to 3.0 Volt, and P3 is adjusted to that the output level is -9dBu (15dB attenuation). Now the DC voltage is set to 6.0 Volt, and P4 is adjusted, until the output level is -24dBu (30dB attenuation). Because of mutual dependence between P3 and P4, the adjustments are repeated, until correct output level is obtained.

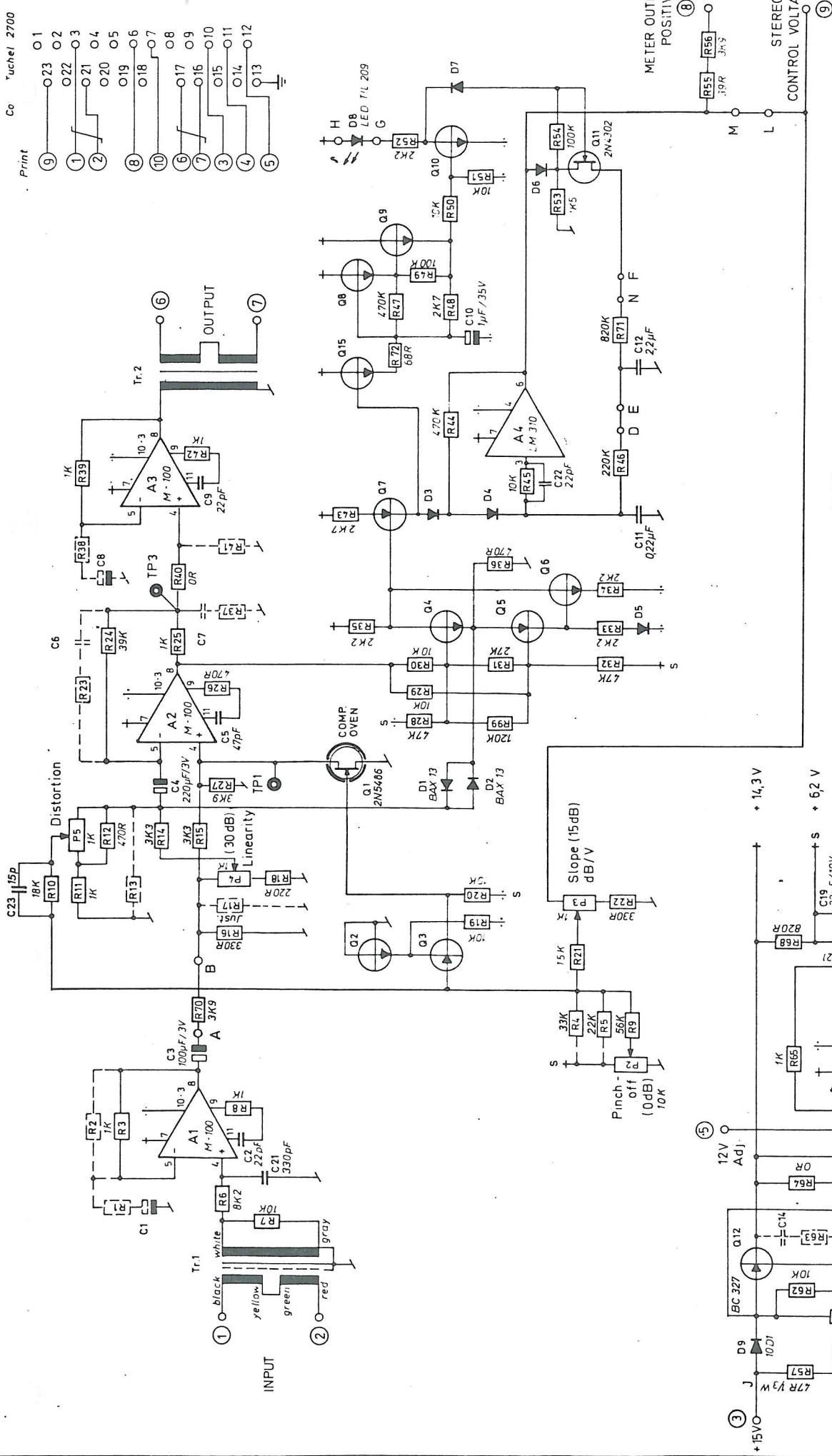
c: Distortion adjustment of P5.

Conditions: Input signal +16dBu 1kHz.

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.





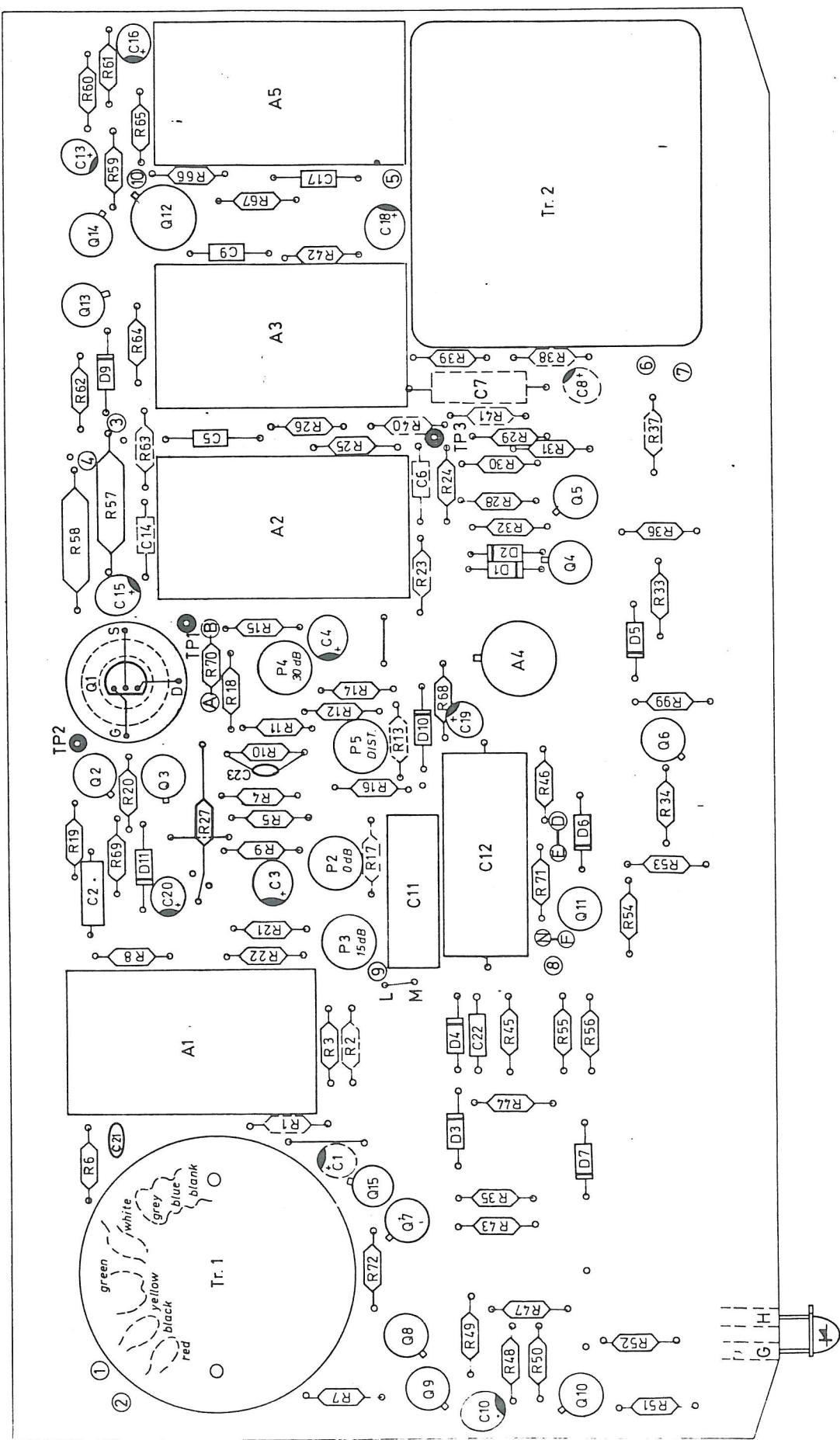
All PNP transistors without diodes	designation	BC 307
" NPN	"	"
" PNP	"	"
" diodes	"	"

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LIMITER DIAGRAM

W 29.175 mm :
bekendt

The diagram illustrates the internal circuitry of the 741 operational amplifier. It features two input stages, each consisting of a pair of transistors (Q1-Q2 and Q3-Q4) connected in a differential configuration. The outputs of these stages are summed at node 6, which is connected to the non-inverting input of the final output stage (Q5-Q6). The inverting input of this stage is connected to ground through a feedback resistor (R2). The output of the final stage is labeled V_o. The circuit also includes biasing and compensation components such as resistors R1, R3, R4, and R5, along with capacitors C1 and C2.



Pos.	Antal	Materiale	Behandl.	Del. at
Målestok	2 : 1			
Tolerans	mm			
Tegnet	28.1.75	IW		
Godkendt				
Revideret	2.			

NTP
N. TØNNES PEDERSEN & S

179-3441-A-3

Ref. no.	Qty.	Description	Value / Size			Type no.	Manufacturer
R66	1	Resistor, carbon	22R	1/8W	5%	SBB 0207	Beyschlag
R55	1	" "	39R	"	"	"	"
R72	1	" "	68R	"	"	"	"
R18	1	" "	220R	"	"	"	"
R22,16	2	" "	330R	"	"	"	"
R12,26,36	3	" "	470R	"	"	"	"
R68,69	2	" "	820R	"	"	"	"
R 3, 8, 11, 25,39,42, 65,67	8	" "	1k	"	"	"	"
R53	1	" "	1k5	"	"	"	"
R33,34,35, 52	4	" "	2k2	"	"	"	"
R43,48	2	" "	2k7	"	"	"	"
R14,15	2	" "	3k3	"	"	"	"
R27,56,70	3	" "	3k9	"	"	"	"
R61	1	" "	6k8	"	"	"	"
R 6	1	" "	8k2	"	"	"	"
R 7,19,20, 29,30,45, 50,51,62	9	" "	10k	"	"	"	"
R21	1	" "	15k	"	"	"	"
R10,60	2	" "	18k	"	"	"	"
R 5,59	2	" "	22k	"	"	"	"
R31	1	" "	27k	"	"	"	"
R 4	1	" "	33k	"	"	"	"
R24	1	" "	39k	"	"	"	"
R28,32	2	" "	47k	"	"	"	"
R 9	1	" "	56k	"	"	"	"
R49,54	2	" "	100k	"	"	"	"
R99	1	" "	120k	"	"	"	"
R46	1	" "	220k	"	"	"	"
R44,47	2	" "	470k	"	"	"	"
R71	1	" "	820k	"	"	"	"
R37	1	" "	180R pre-emphasis only			"	"
R23	1	" "	330R	"	"	"	"
R57,58	2	" "	47R	1/3w	5%	SBD 0411	"
R40,64	2	" "	Strap not used				
R 1, 2,13, 17,38,41, 63	7	" "					
P 3, 4, 5	3	Trim-potentiometer	1k			3329-1-102	Bourns
P 2	1		10k			3329-1-103	"
C10	1	Capacitor, tantal	1u	35V		ETP 1 A	ERO
C18	1	" "	10u	16V		ETP 2 E	"
C13,15	2	" "	10u	35V		ETP 3 C	"
C16	1	" "	22u	16V		"	"
C19	1	" "	33u	10V		"	"
C 3	1	" "	100u	3V		"	"

Ref. no.	Qty.	Description	Value / Size	Type no.	Manufacturer
C20	1	Capacitor, tantal	100u 10V	ETP 5	ERO
C 4	1	" "	220u 3V	"	"
C 7	1	" , polyester	47n 630V pre-emphasis only		Miniwatt
C11	1	" "	220n 250V	32234	Siemens
C12	1	" "	2u2 100V 10%	1813	ERO
C 2, 9, 17, 22	4	" , styroflex	22p 160V		Siemens
C 5		" "	47p 160V		"
C 6	1	" "	100p 160V pre-emphasis only		"
C23	1	" , ceramic	15p 100V 2%		Philips
C21	1	" "	330p 100V 2%		"
C 1, 8, 14	3		Not used		
D 9	1	Diode		1N4001	
D 3- 7	5	"		1N4148	
D 1, 2	2	"		1N4152	
D10,11	2	" , reference		1N821	Motorola
Q 2, 4, 6, 8, 9, 10, 13, 14, 15	9	Transistor		BC 237	Siemens
Q 3, 5, 7	3	"		BC 307	"
Q12	1	"		BC 327	"
Q11	1	" FET		2N4302	National
Q 1	1	" "		2N5486	"
A 1- 3, 5	4	Op-amp.		M100	NTP
A 4	1	"		LM 310 AH	National
Tr.2	1	Transformer		13590	J.S.
Tr.1	1	"		13592/2	"
	1	Component oven	80°C (to-18)	5st 1-2	Jermyn
	1	P.C. Board		179-2340	NTP

Ref. no.	Qty.	Description	Value / Size	Type no.	Manufacturer
	1	Frontplate engraving of frontplate		NTP 179-2453 NTP 179-3454	Dansett S. Christensen
	1	Mounting plate		NTP 179-2451	Dansett
	1	Mounting plate		NTP 179-2452	"
	1	Chassis		NTP 235-1013	"
	2	Cover plate		NTP 235-1014	"
	1	Insulation plate		NTP 235-1015	Elektro Isola
	1	Stay		NTP 235-1016	Hildebrandt
	2	Locking device		NTP 235	
	1	Connector		T 2700	Tuchel
	1	Switch		LT 401.3.3	Widmaier
	1	Button	Red with black frame	2A2	"
	1	Bulb	24V 20mA		"
	1	Resistor, carbon	100R 1/3W 5%	SBB 0207	Beyschlag
	1	Diode,LED		TIL 209	Texas

Ref. no.	Qty.	Description	Value / Size	Type no.	Manufacturer
	1	Frontplate Engraving of frontplate		NTP 179-2453-B NTP 179-3454-B	Dansett S.Christensen
	1	Mounting plate		NTP 235-1031	Dansett
	1	Mounting plate		NTP 235-1012	"
	1	Chassis		NTP 235-1013	"
	2	Cover plate		NTP 235-1014	"
	1	Insulation plate		NTP 235-1015	Elektro Isola
	1	Stay		NTP 235-1016	Hildebrandt
	2	Locking device		NTP 235	
	1	Connector		T 2700	Tuchel
	1	Diode, LED		TIL 209	Texas