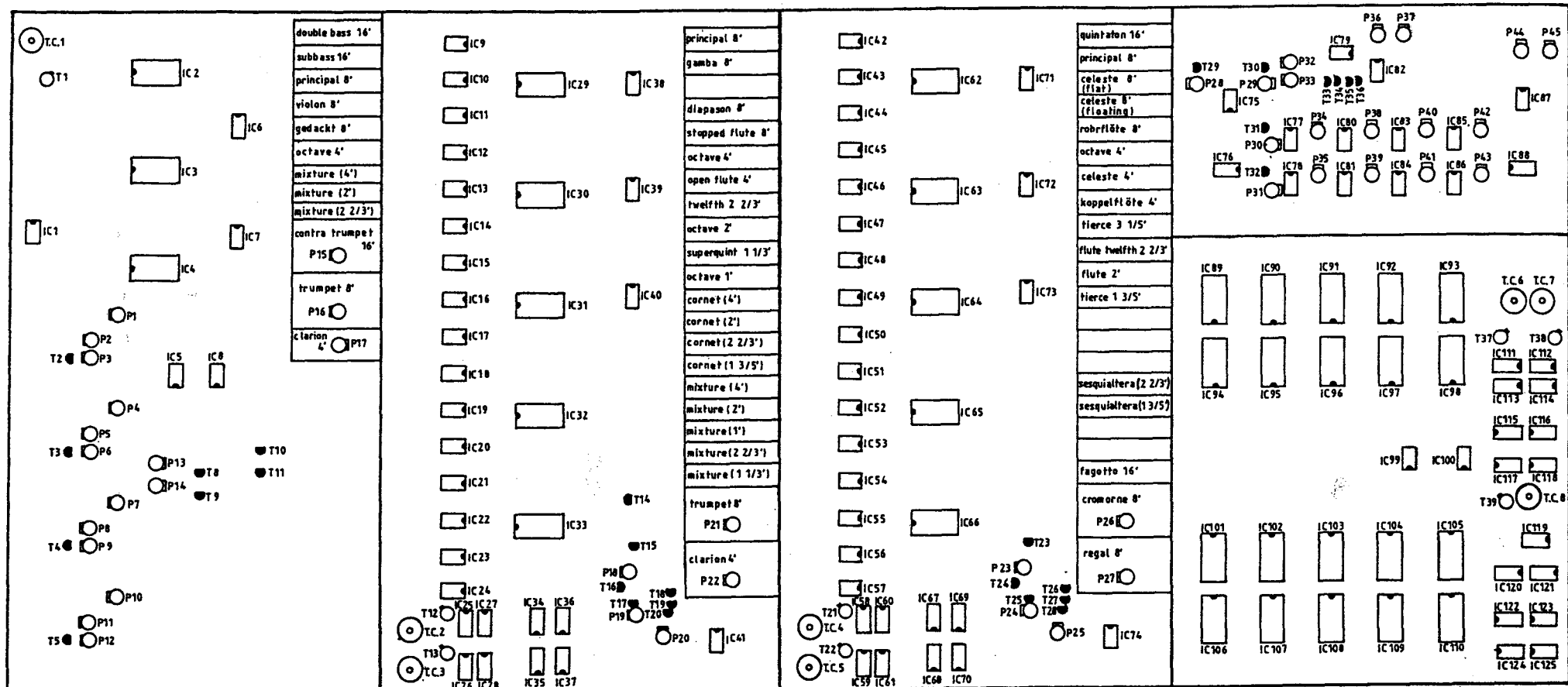


=====
= S C H E M A T I C D I A G R A M =
= J O H A N N U S =
= O P U S 2 3 5 =
= : : : : : : : : : : : : : : : : =
alterations reserved

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2. POWER SUPPLY
3. SWITCH-SECTION PRESETS; HICK CIRCUIT; TREMULANT CIRCUIT; EXPRESSION PEDAL CIRCUIT;
CHORUS & VOLUME
4. COUPLER CIRCUIT
5. GENERATOR & KEYING PEDAL
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9. GENERATORS DIAPASON & TIERCE GREAT
10. KEYING & PRE-AMP'S DIAPASON GREAT
11. KEYING & PRE-AMP'S TIERCE GREAT
12. KEYING GREAT
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22. INPUT/OUTPUT CIRCUIT ECHO UNIT
23. DELAY LINE ECHO UNIT
24. VOICE AMPLIFIERS
25. POWER-AMPLIFIER (4x)
26. LOUDSPEAKER- & HEADPHONES-CIRCUIT
27. GENERAL INFORMATION SEMI-CONDUCTORS



- P1: volume treble II amplifier
- P2: bass adjustment treble II amplifier
- P3: treble adjustment treble II amplifier
- P4: volume treble I amplifier
- P5: bass adjustment treble I amplifier
- P6: treble adjustment treble I amplifier
- P7: volume middle amplifier
- P8: bass adjustment middle amplifier
- P9: treble adjustment middle amplifier
- P10: volume bass amplifier
- P11: bass adjustment bass amplifier
- P12: treble adjustment bass amplifier
- P13: linearity expression pedal swell
- P14: linearity expression pedal great
- P15: volume contra trumpet 16' pedal
- P16: volume trumpet 8' pedal
- P17: volume clarion 4' pedal
- P18: tremulant speed great
- P19: hick depth great
- P20: tremulant depth great
- P21: volume trumpet 8' great
- P22: volume clarion 4' great
- P23: tremulant speed swell
- P24: hick depth swell
- P25: tremulant depth swell
- P26: volume cromorne 8' swell
- P27: volume regal 8' swell

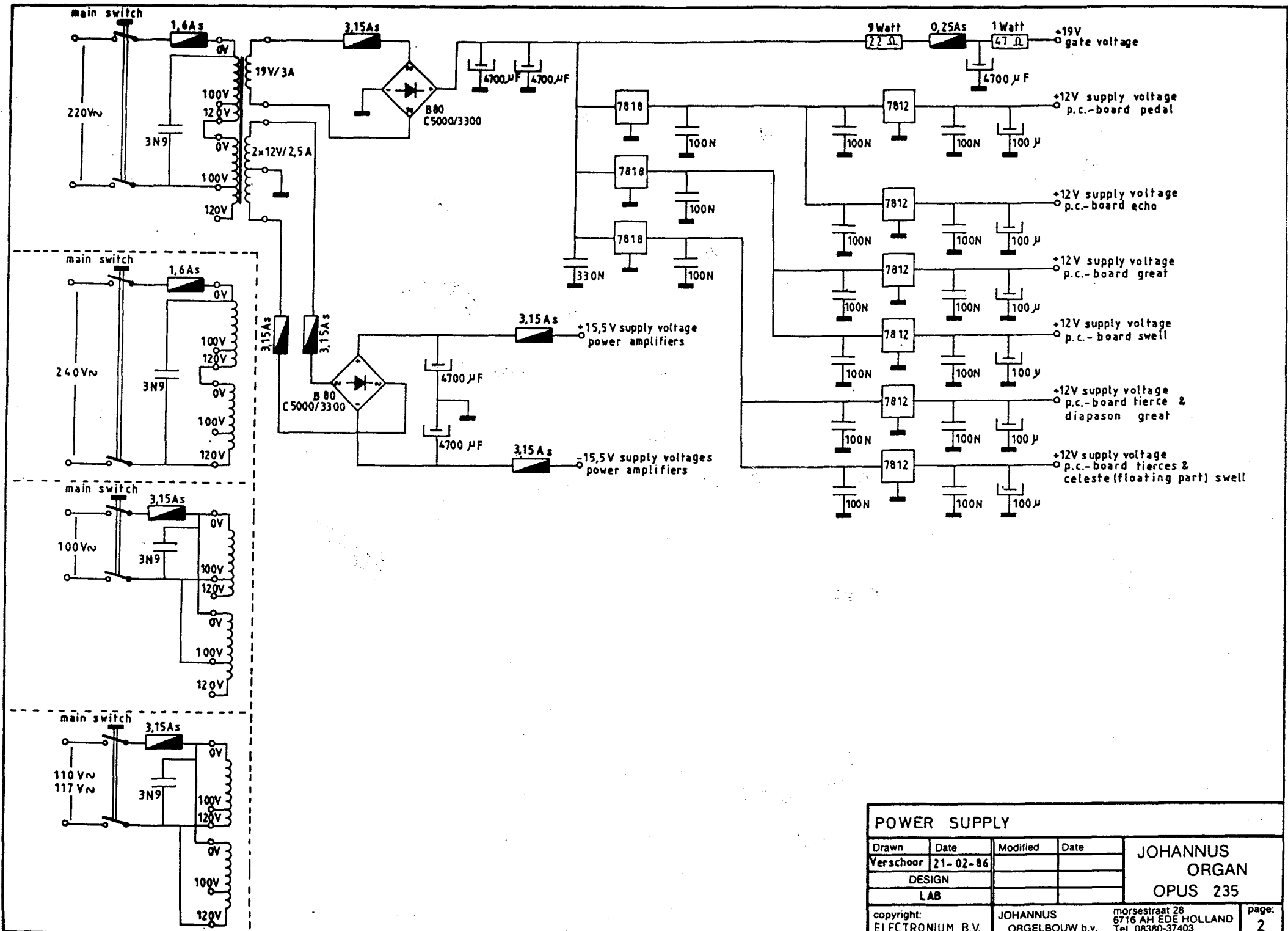
- P28: amplitude output channel A echo unit
- P29: amplitude output channel B echo unit
- P30: clockripple elimination delay line echo unit channel B
- P31: clockripple elimination delay line echo unit channel A
- P32: amplitude feed-back signal channel A to channel B
- P33: amplitude feed-back signal channel B to channel A
- P34: DC-offset IC 77
- P35: DC-offset IC 78
- P36: clockfrequency
- P37: amplitude chorus
- P38: DC-offset IC 80
- P39: DC-offset IC 81
- P40: DC-offset IC 83
- P41: DC-offset IC 84
- P42: DC-offset IC 85
- P43: DC-offset IC 86
- P44: amplitude input channel B echo unit
- P45: amplitude input channel A echo unit

- T.C. 1: tuning pedal
- T.C. 2: tuning 2nd; 4th & 5th octave great
- T.C. 3: tuning 1st & 3rd octave great
- T.C. 4: tuning 2nd & 4th octave swell
- T.C. 5: tuning 1st; 3rd & 5th octave swell
- T.C. 6: tuning diapason great
- T.C. 7: tuning tierce great
- T.C. 8: tuning celestes & tierces swell

- IC 1; 36; 37; 69; 70; 117; 118; 124; 125.....4520
 - IC 2-4; 29-33; 62-66;.....TMS 3617
 - IC 5-8; 38-41; 71-75; 87; 99; 100.....TL 074
 - IC 9-24; 42-57.....LM 339
 - IC 25; 26; 58; 59; 111; 112; 119.....MO 83
 - IC 27; 28; 60; 61; 113; 114; 120; 121.....4512
 - IC 34; 35; 67; 68; 115; 116; 122; 123.....4046
 - IC 76; 88.....NE 570
 - IC 77; 78; 80; 81; 83; 84; 85; 86.....TDA 2108
 - IC 79.....4093
 - IC 82.....LM 324
 - IC 89-98; 101-110.....TMS 3615
-
- T 1; 2; 3; 19; 20; 37; 38; 39.....BC 141
 - T 2-9; 14-20; 23-32; 34; 35.....BC 549
 - T 10; 11.....BC 337
 - T 33; 36.....BC 558

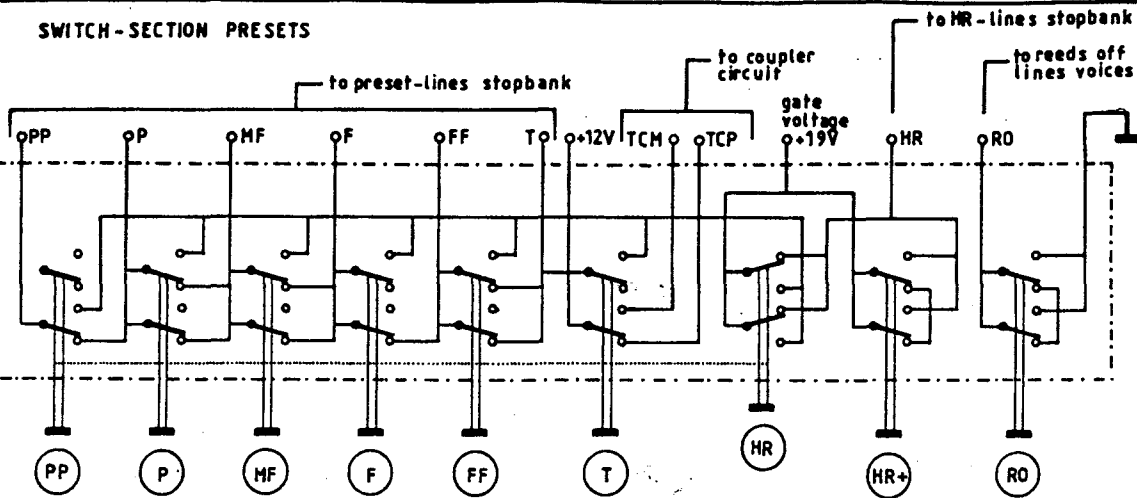
T6 & T7 ARE DISPOSED

POSITION DIAGRAM			
Drawn	Date	Modified	Date
Verchoor	08-04-86		
DESIGN			
LAB.			
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		morsstraat 28 6716 AH EDE HOLLAND Tel. 08380-37403	
			page: 1

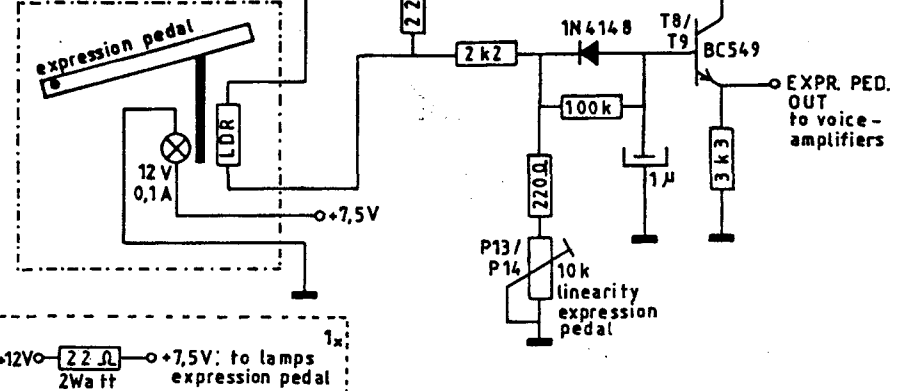


POWER SUPPLY				JOHANNUS ORGAN OPUS 235
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Verschoor	21-02-86			
DESIGN				
LAB				
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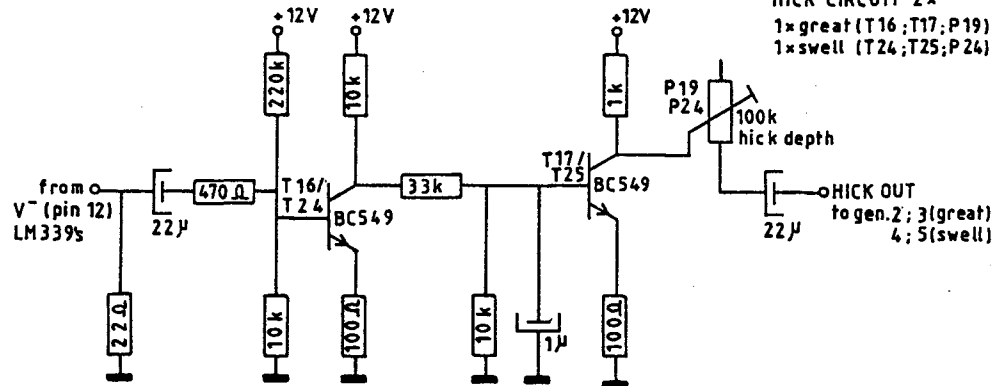
SWITCH-SECTION PRESETS



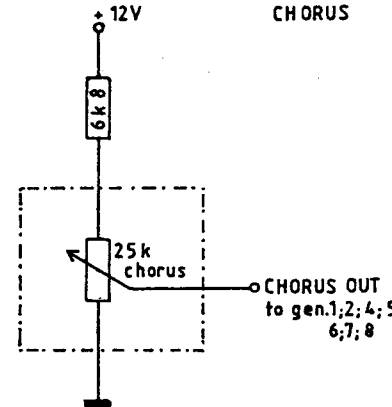
EXPRESSION PEDAL CIRCUIT 2x



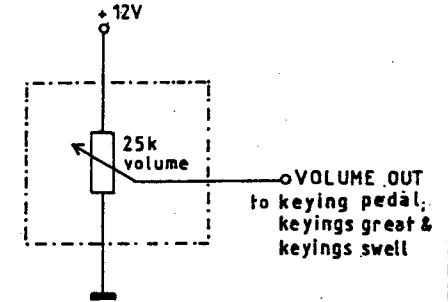
HICK CIRCUIT 2x



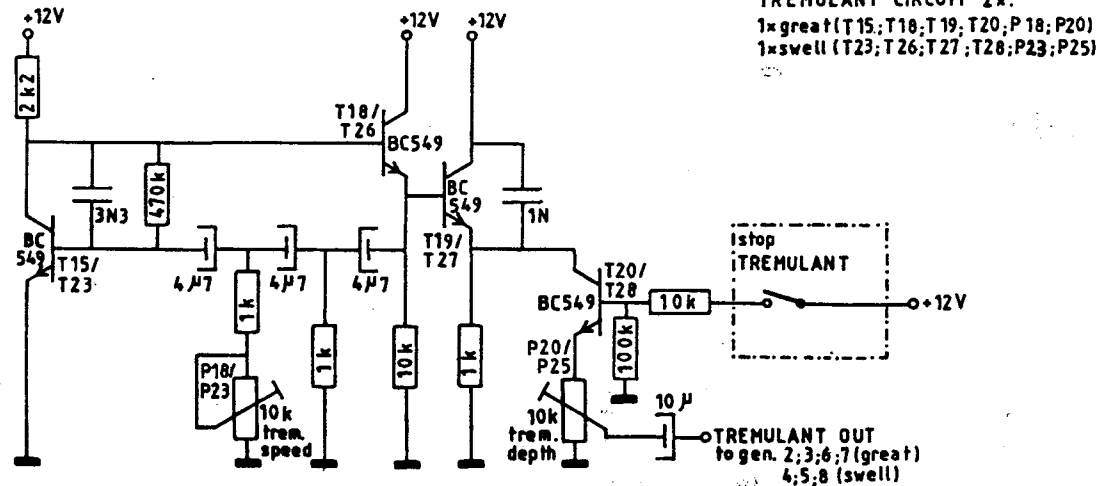
CHORUS



VOLUME



TREMULANT CIRCUIT 2x:

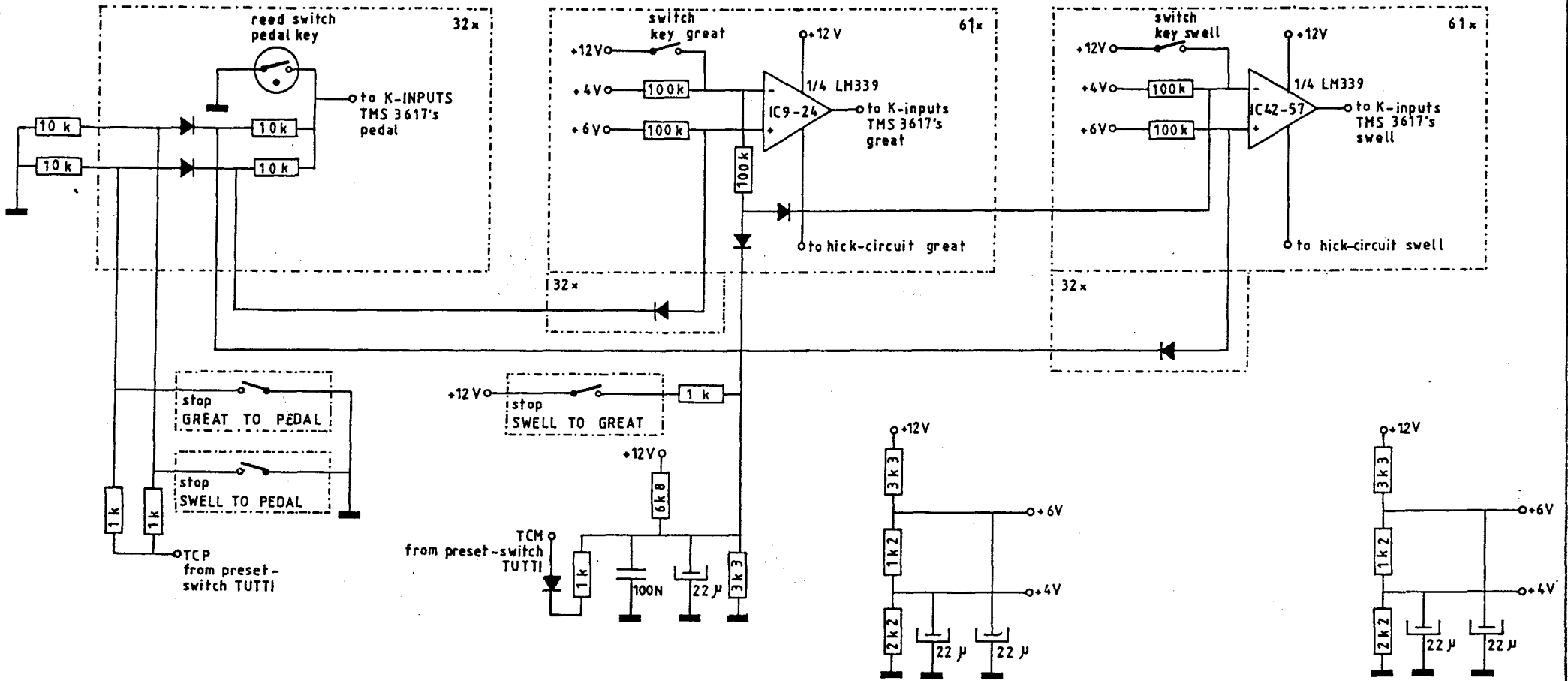


SWITCH-SECTION

PRESETS ; HICK CIRCUIT ; TREMULANT CIRCUIT ;

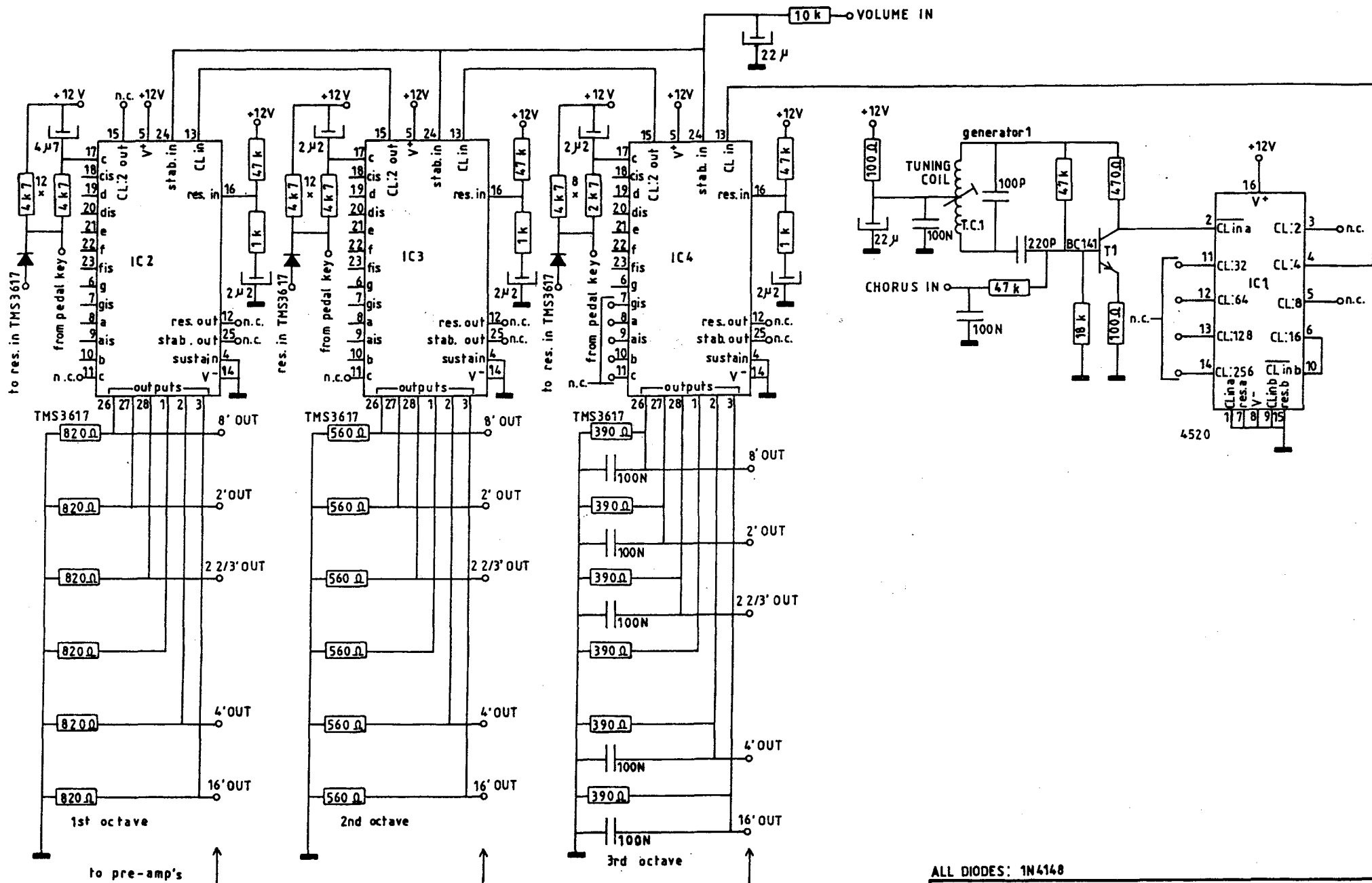
EXPRESSION PEDAL CIRCUIT ; CHORUS & VOLUME

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DESIGN				
LAB.				
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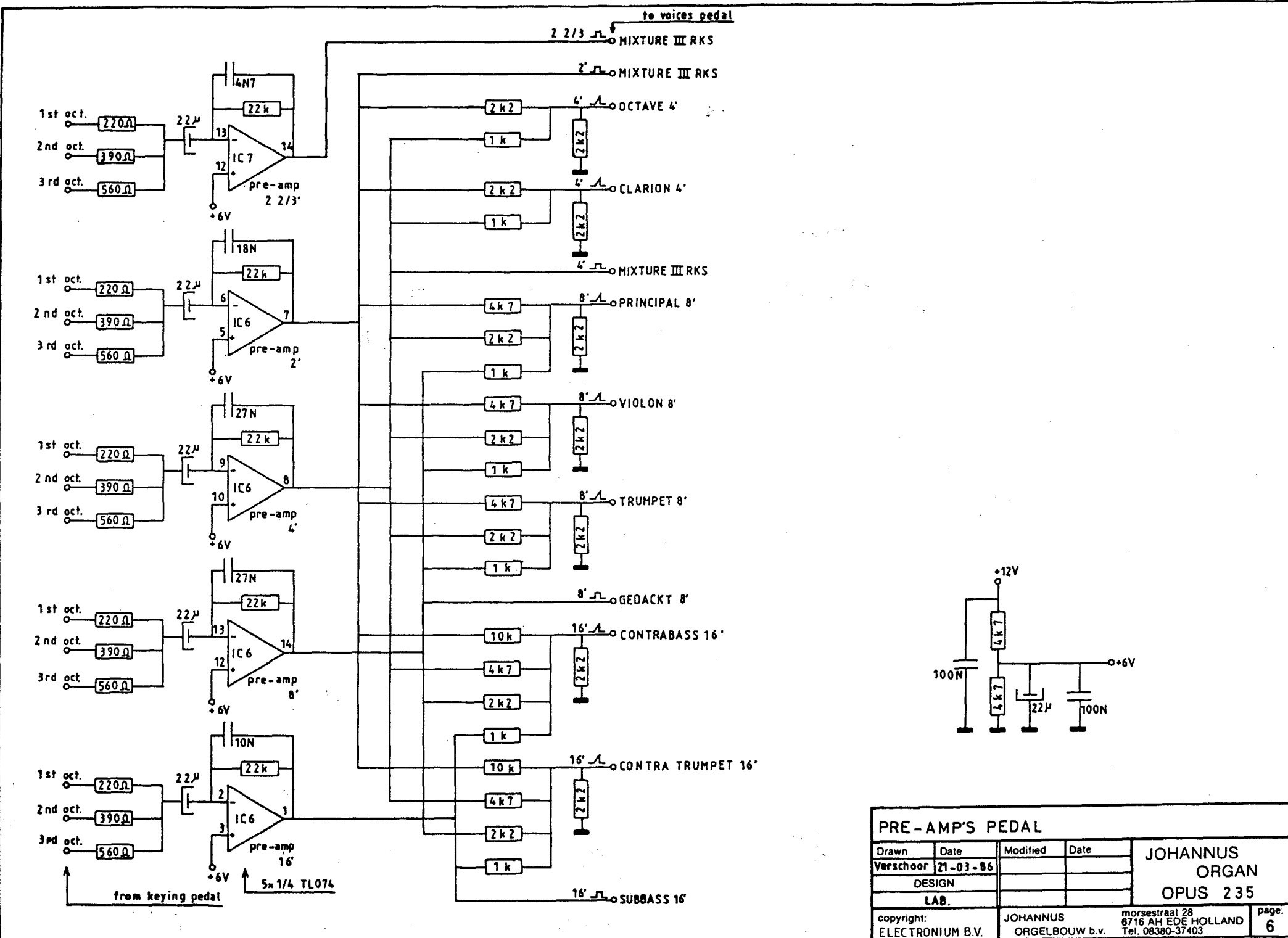
COUPLER CIRCUIT				JOHANNUS ORGAN OPUS 235
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DESIGN				
LAB.				
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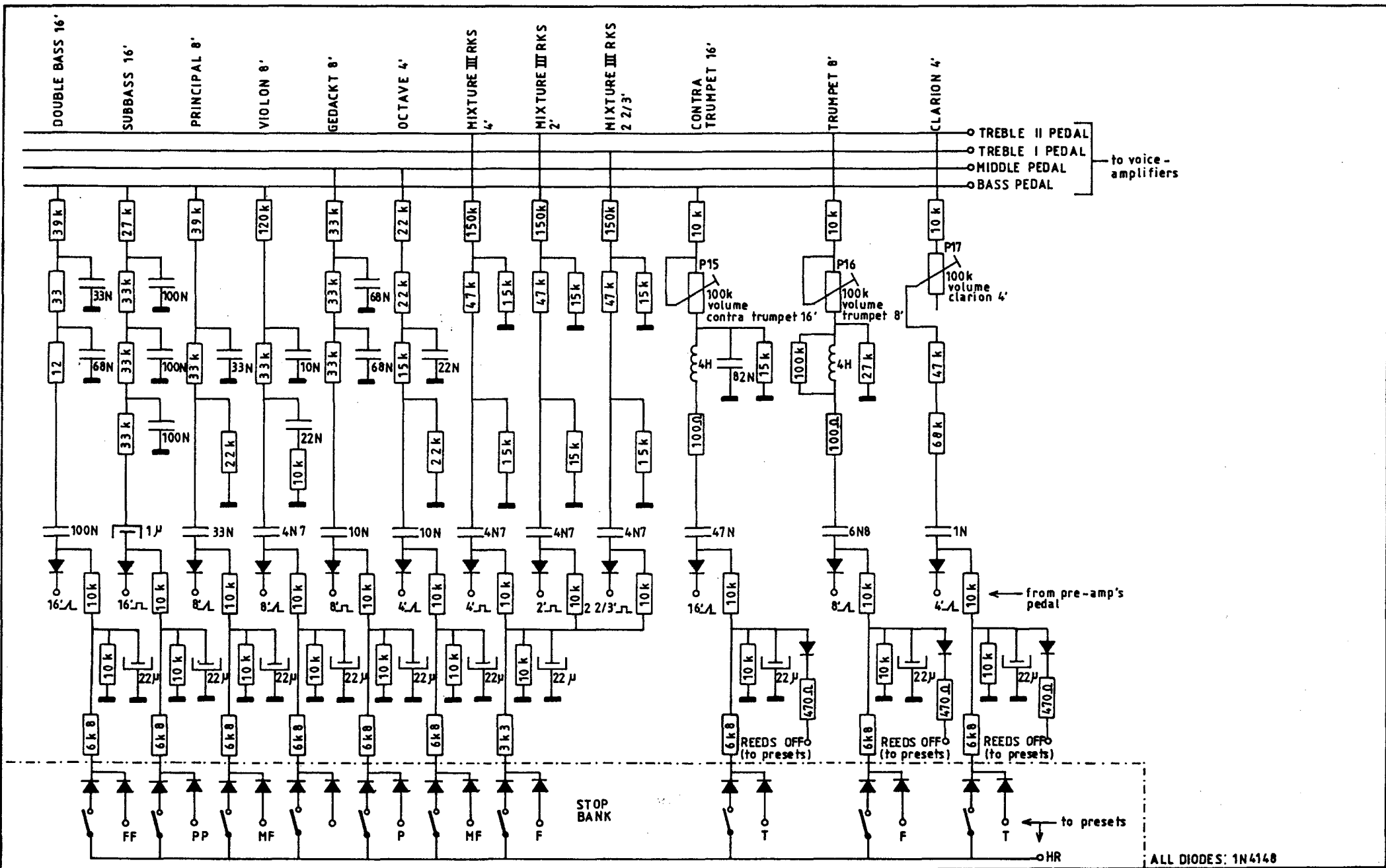
ALL DIODES: 1N4148

GENERATOR & KEYING PEDAL

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LAB.				
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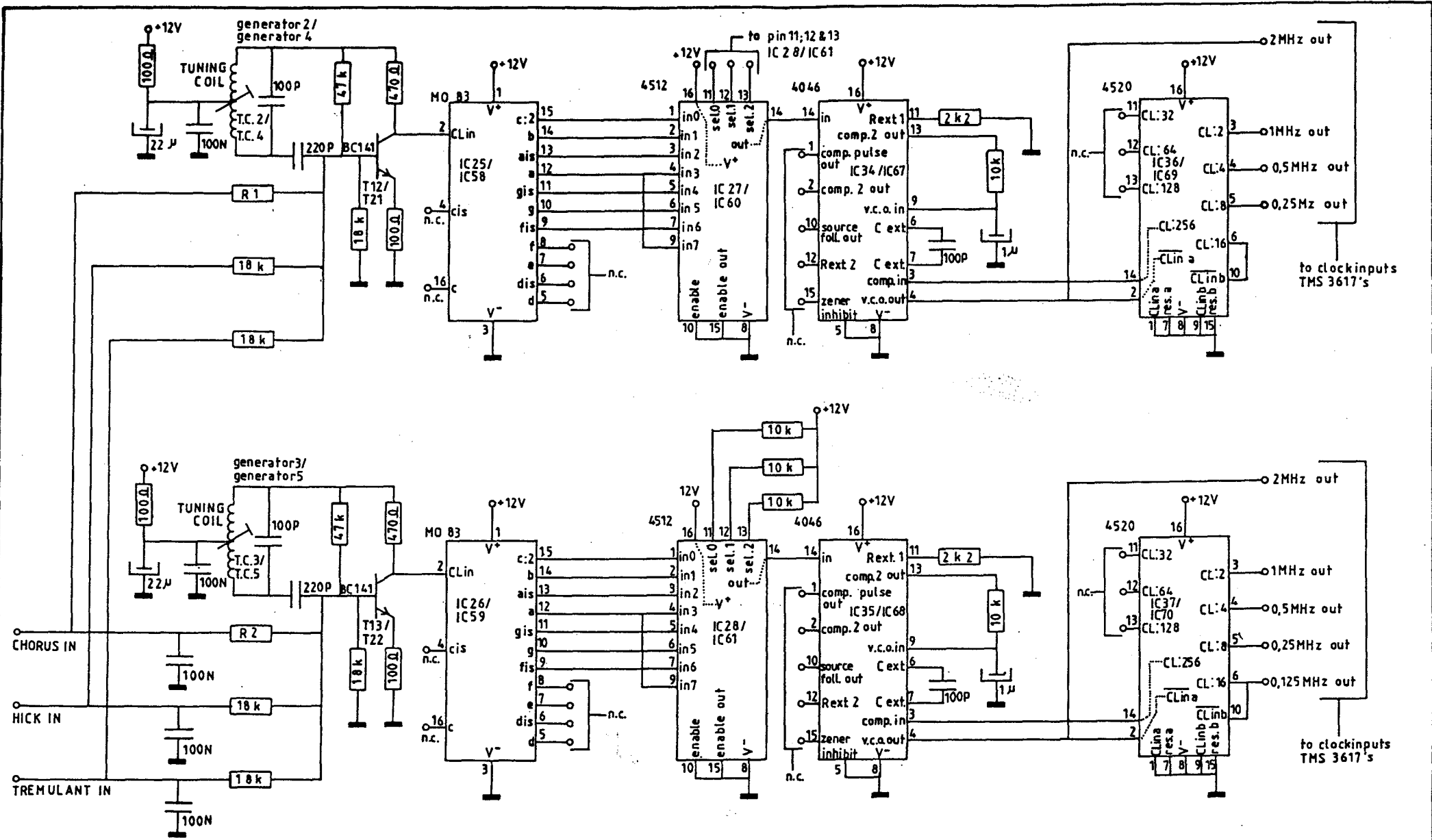


PRE-AMPS PEDAL				JOHANNUS ORGAN OPUS 235	page: 6
Drawn	Date	Modified	Date		
Verschoor	21-03-86				
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LAB.					
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ALL DIODES: 1N4148

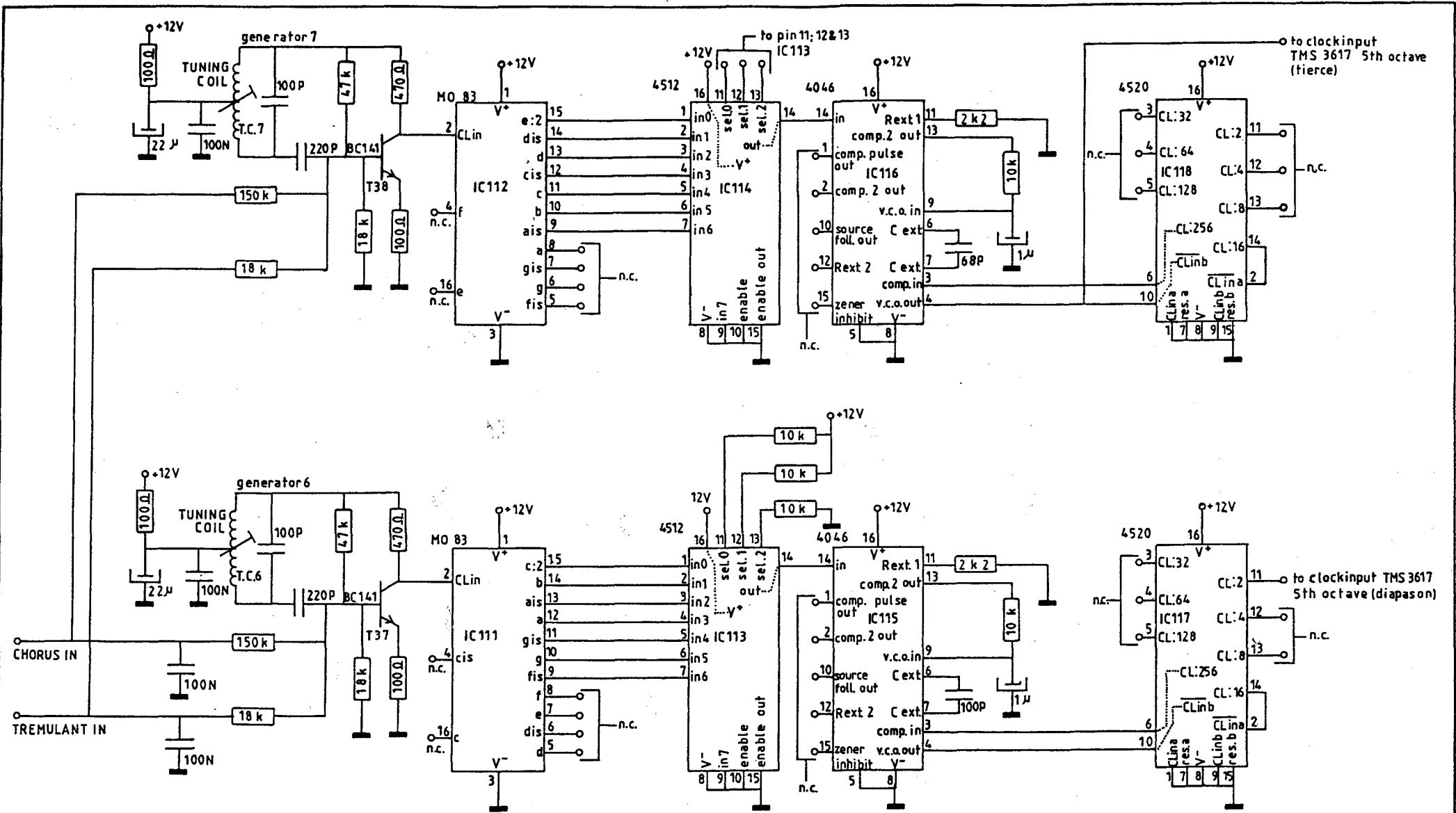
VOICES PEDAL			
Drawn	Date	Modified	Date
Verschoor	25-03-86		
DESIGN			
LAB.			
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ELECTRONIUM B.V.			page: 7



generator 2: R1 = 56k
 generator 4: R1 = 39k
 generator 3: R2 = —
 generator 5: R2 = 100k

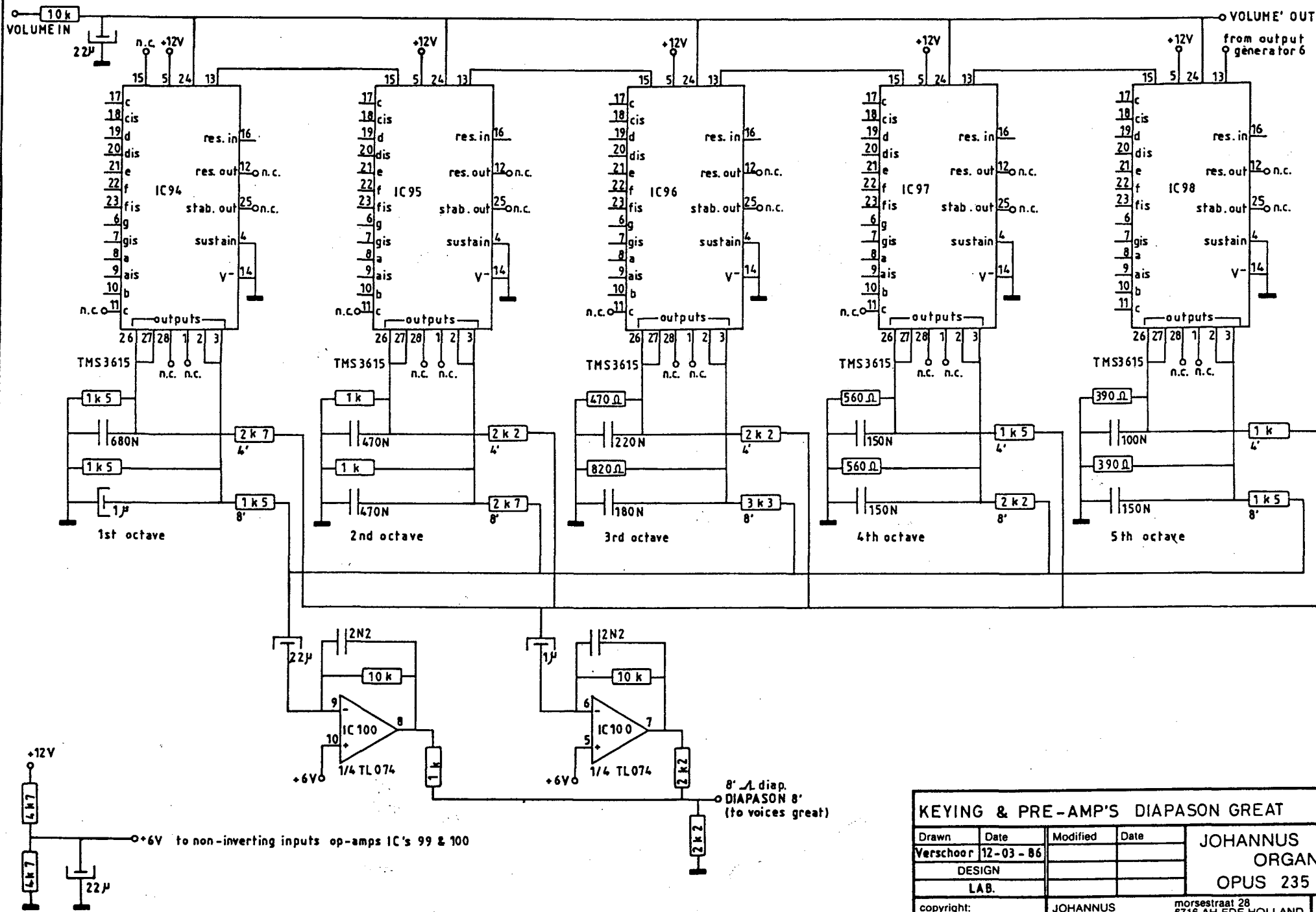
GENERATORS MANUALS (1x GREAT & 1x SWELL)

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DESIGN				
LAB				
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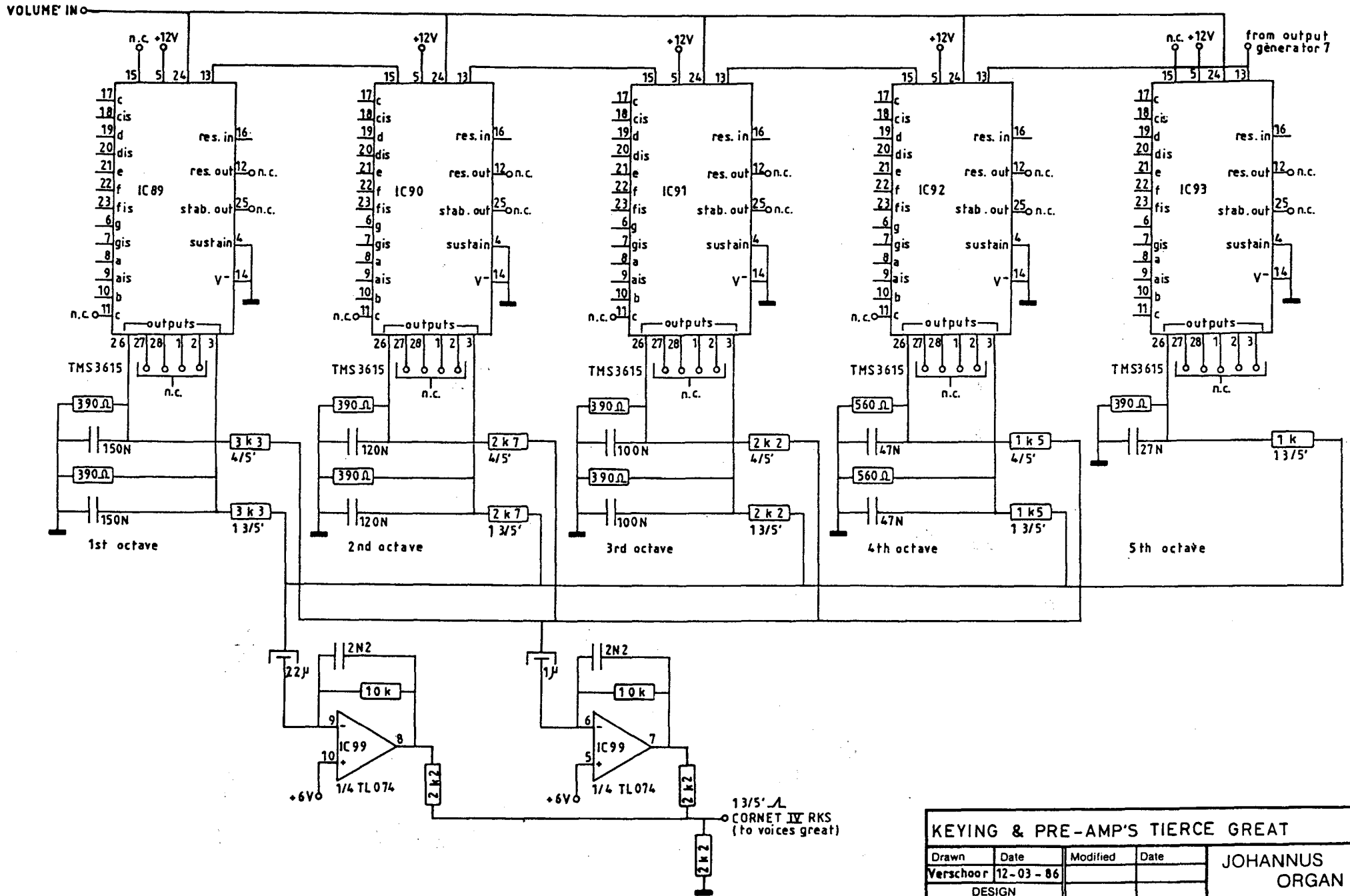
GENERATORS DIAPASON & TIERCE GREAT			
Drawn	Date	Modified	Date
Verschoor	25-02-86		
DESIGN			
LAB			
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		Tel. 08380-37403	

NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the I.C.'s TMS 3615 are connected with the corresponding pins of the TMS3617's on the P.C.-board of great



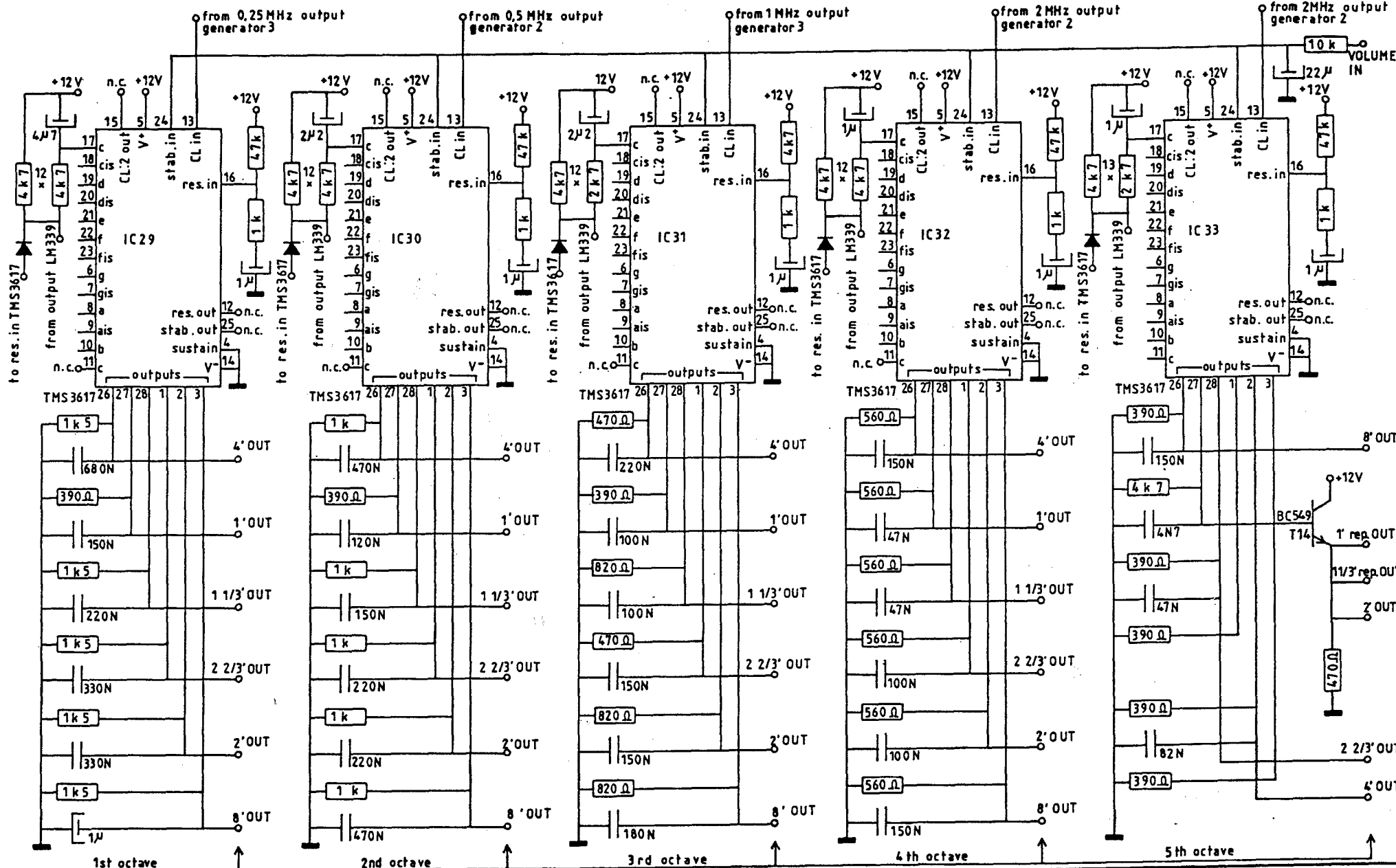
KEYING & PRE-AMP'S DIAPASON GREAT			
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DESIGN			
LAB.			
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		Tel. 08380-37403	

NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the IC's TMS 3615 are connected with the corresponding pins of the TMS3617's on the P.C.-board of great



KEYING & PRE-AMP'S TIERCE GREAT

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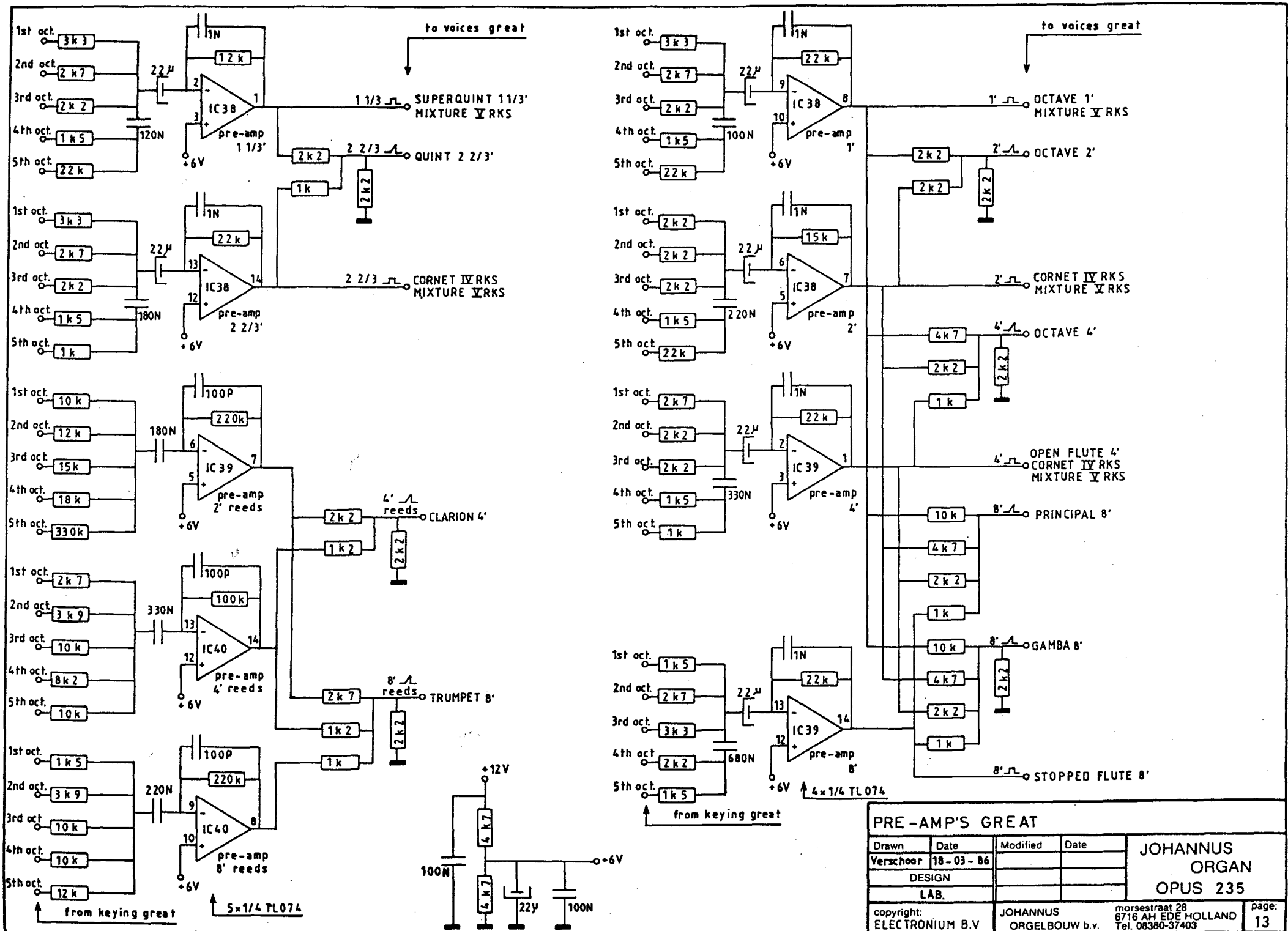


to pre-amp's

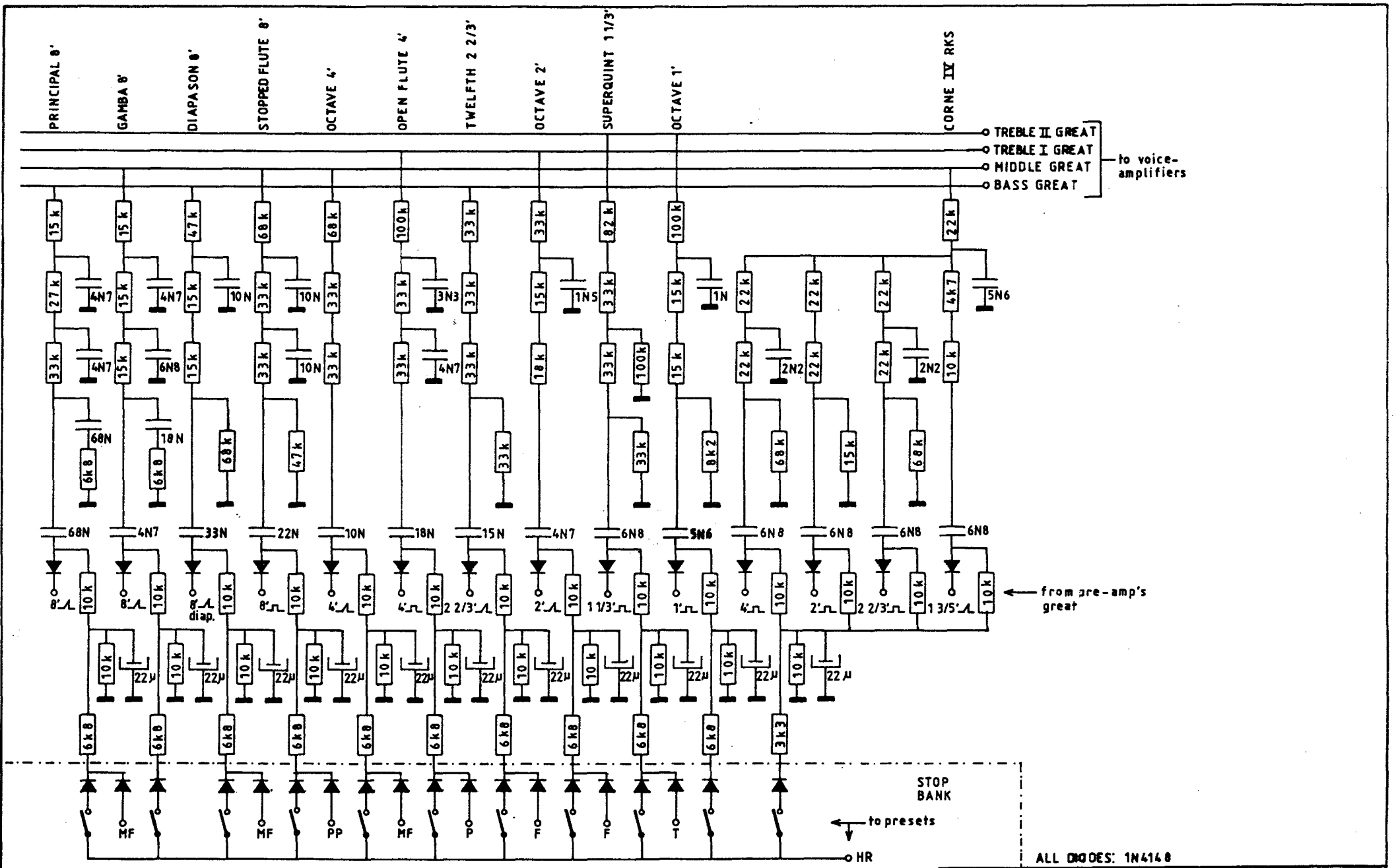
ALL DIODES: 1N4148

KEYING GREAT			
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DESIGN			
LAB.			
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			page: 12

JOHANNUS
ORGAN
OPUS 235

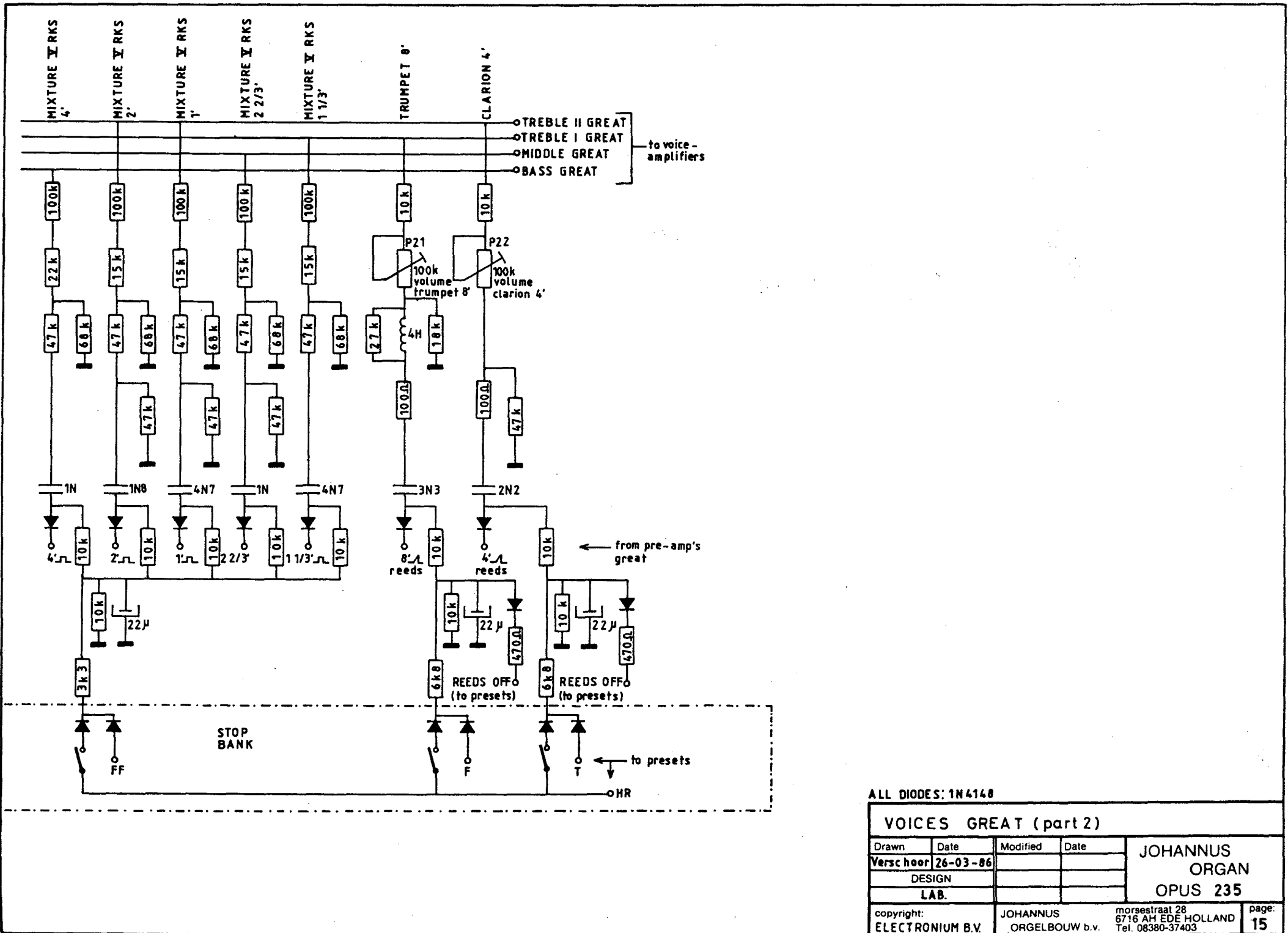


PRE-AMP'S GREAT				JOHANNUS ORGAN	
Drawn	Date	Modified	Date	OPUS 235	
Verschoor	18-03-86				
DESIGN					
LAB.					
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		Tel. 08380-37403			



VOICES GREAT (part 1)

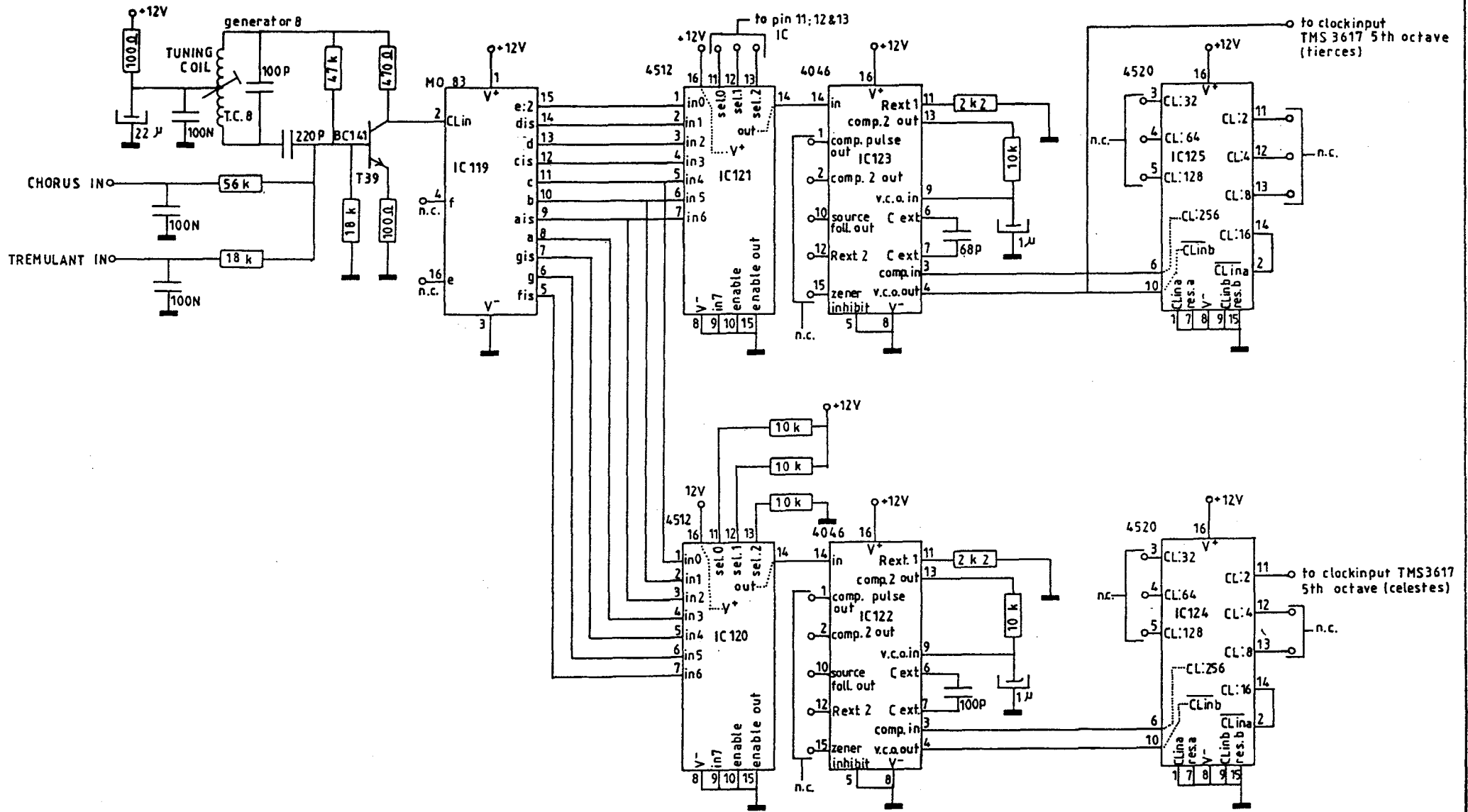
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DESIGN				
LAB.				
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ALL DIODES: 1N4148

VOICES GREAT (part 2)

Drawn	Date	Modified	Date	JOHANNUS ORGAN OPUS 235
Verschoor	26-03-86			
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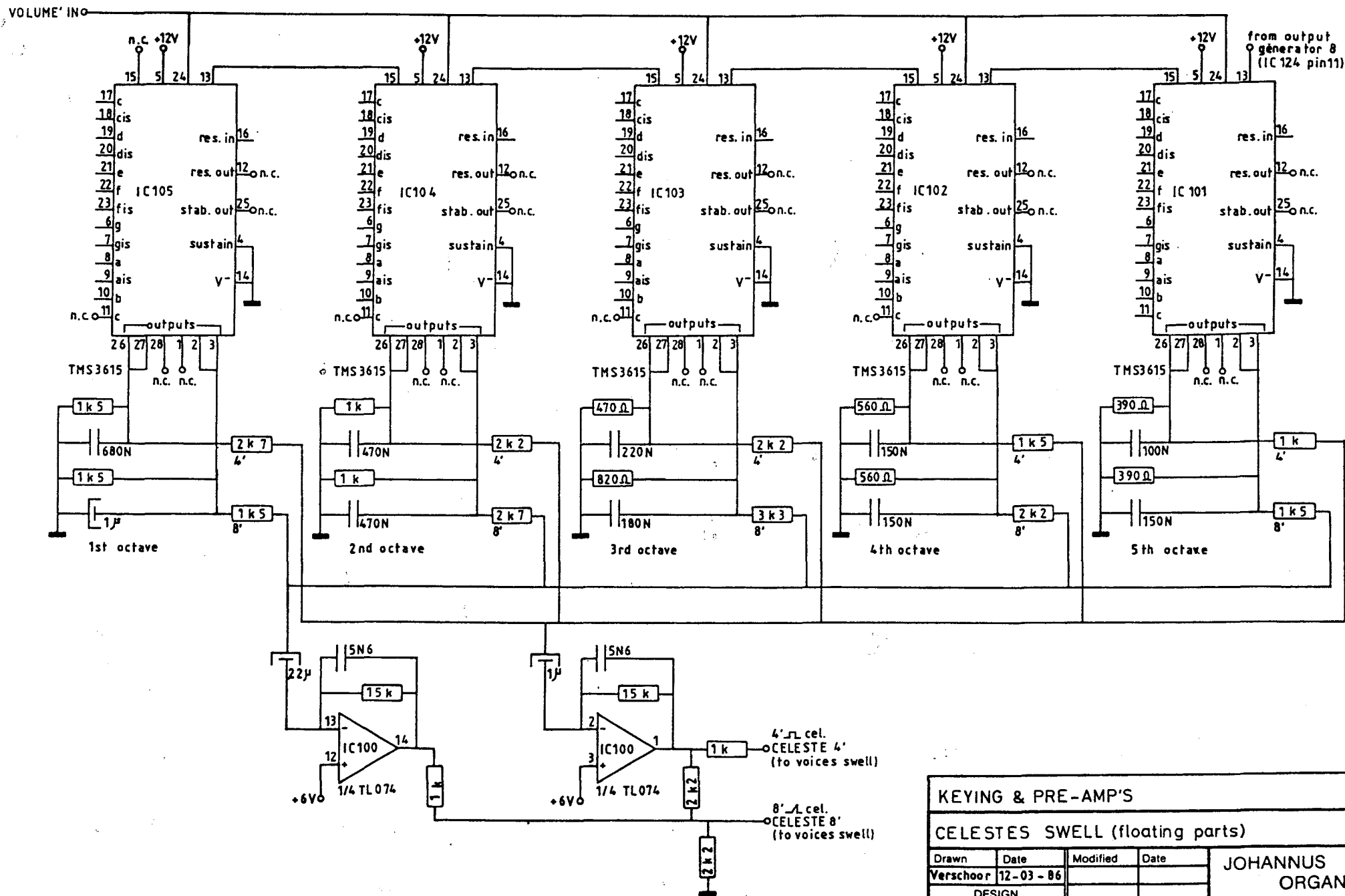


GENERATOR CELESTES (floating parts) &

TIERCES SWELL

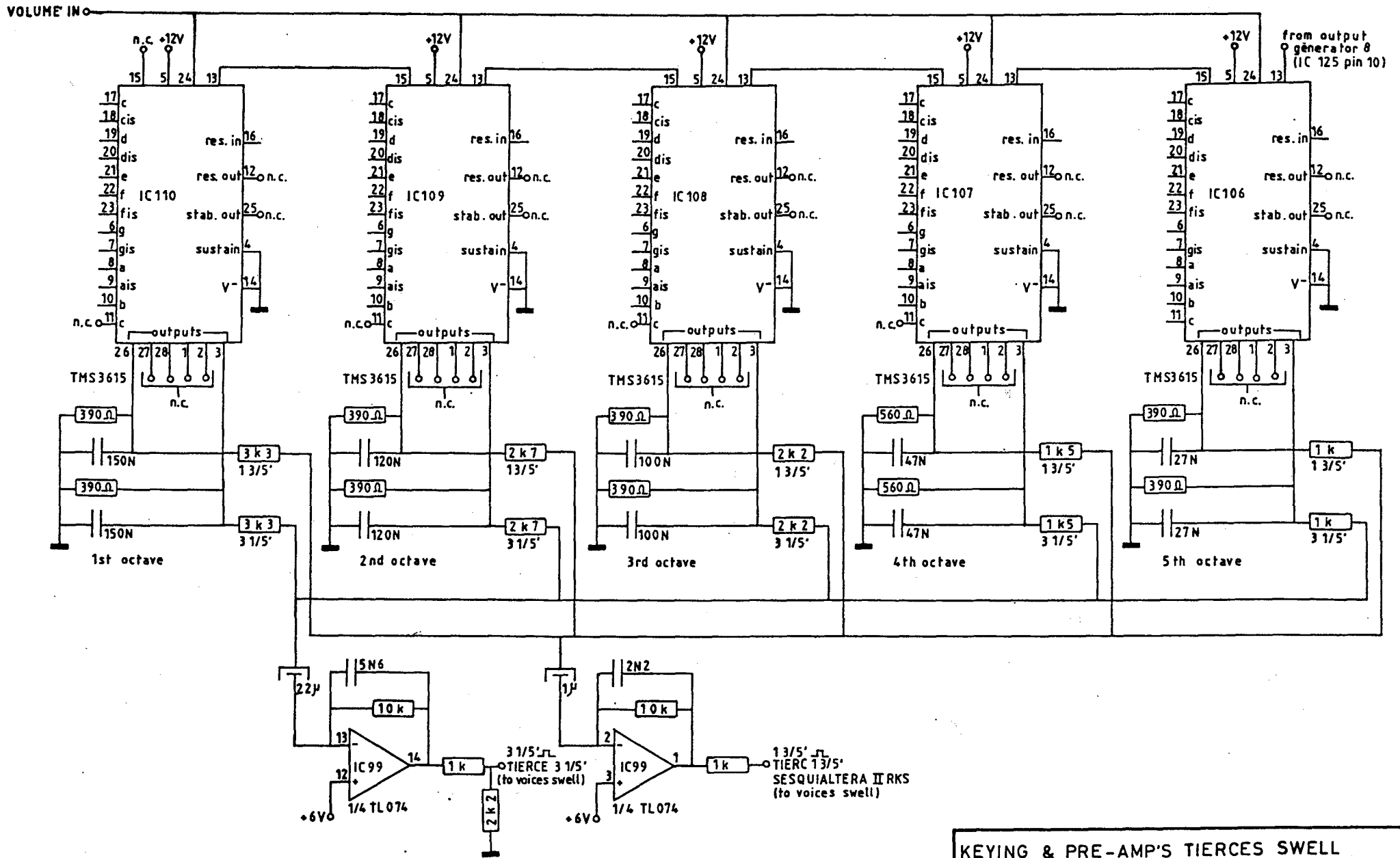
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LAB				
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NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the I.C.'s TMS 3615 are connected with the corresponding pins of the TMS3617's on the P.C.-board of swell

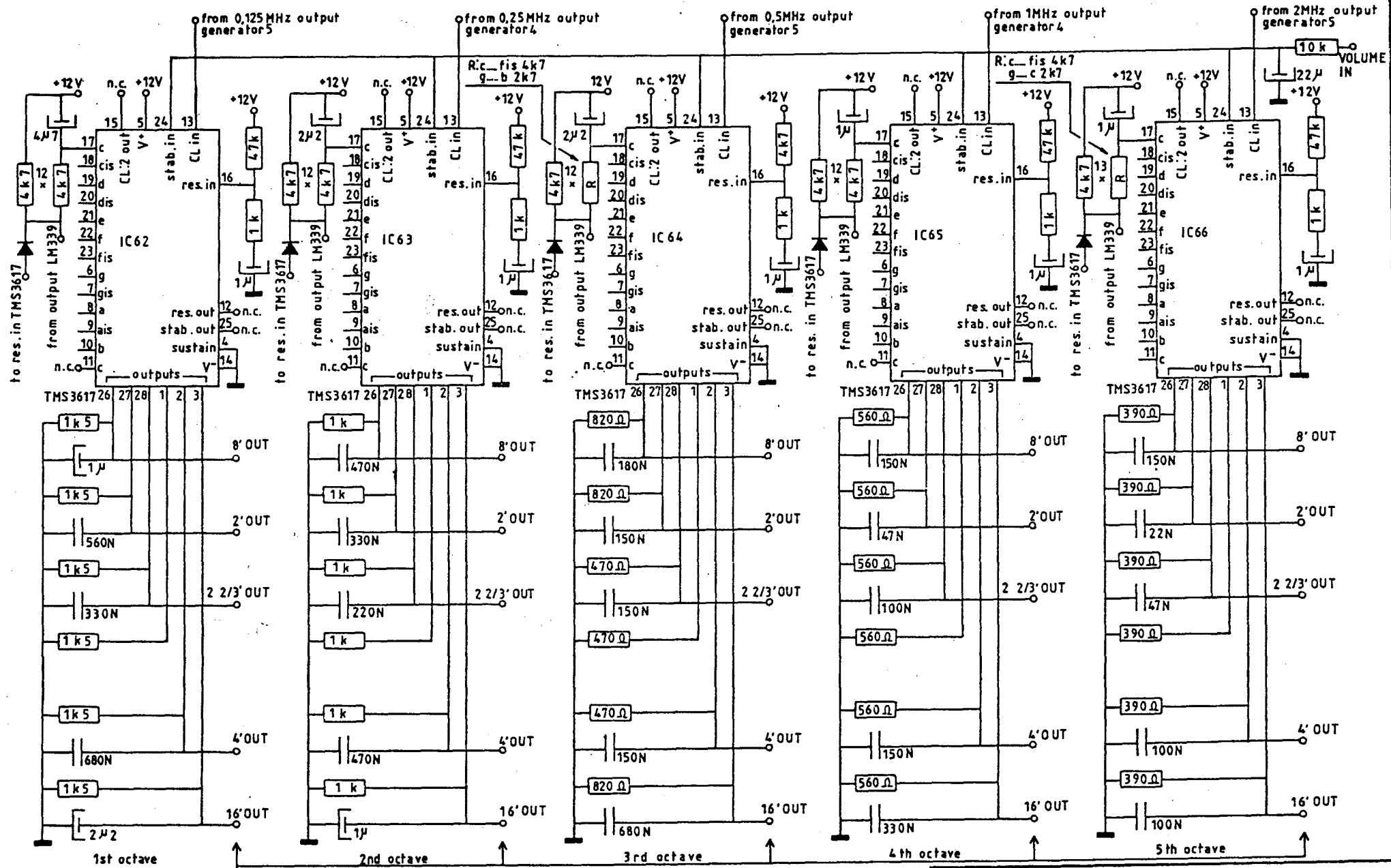


KEYING & PRE-AMP'S			
CELESTES SWELL (floating parts)			
Drawn	Date	Modified	Date
Verschoor	12-03-86		
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LAB.			
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		page:	17

NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the I.C.'s TMS 3615 are connected with the corresponding pins of the TMS3617's on the P.C.-board of swell



KEYING & PRE-AMP'S TIERCES SWELL			
Drawn	Date	Modified	Date
Verschuur	12-03-86		
DESIGN			
LAB.			
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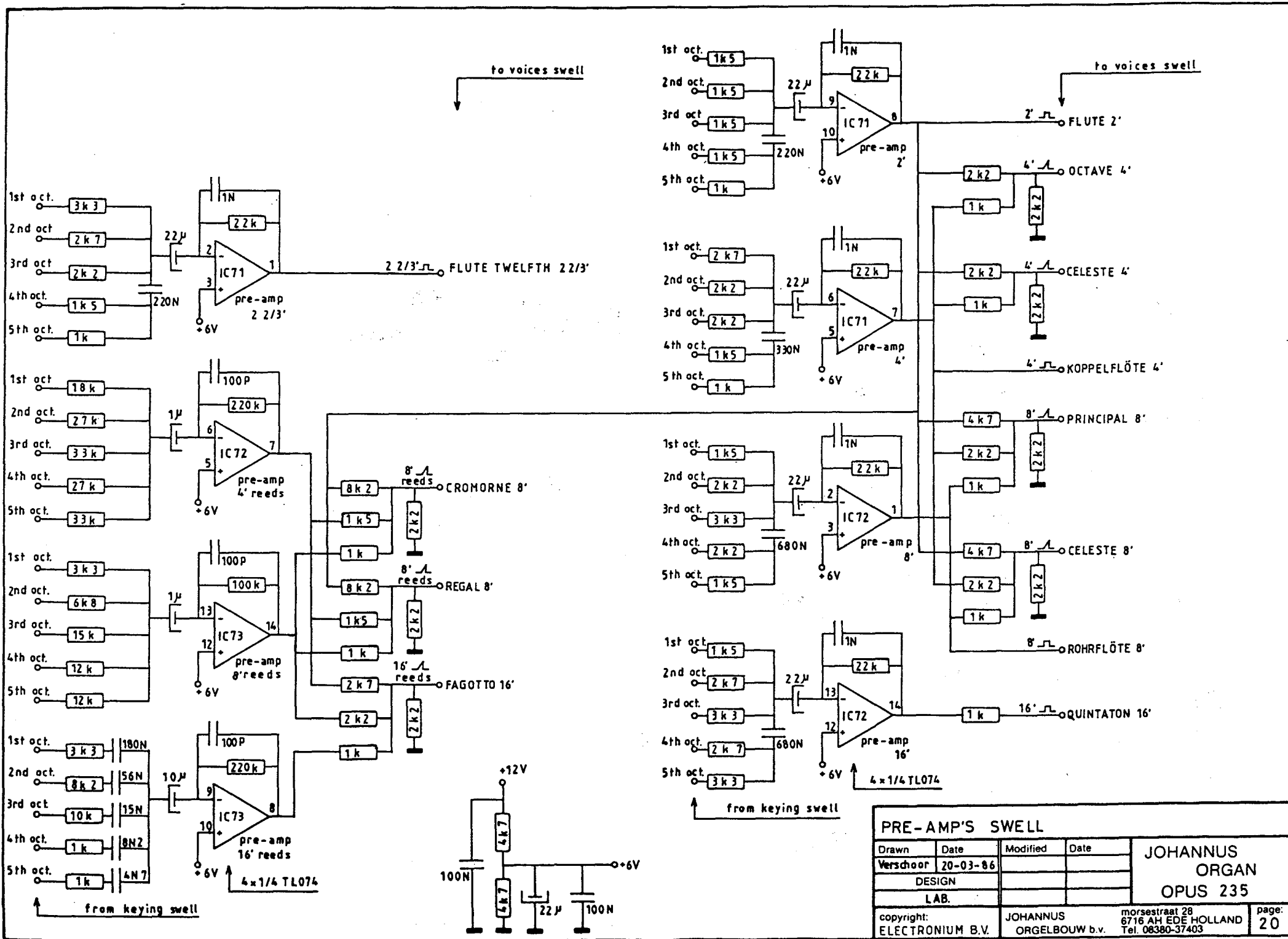


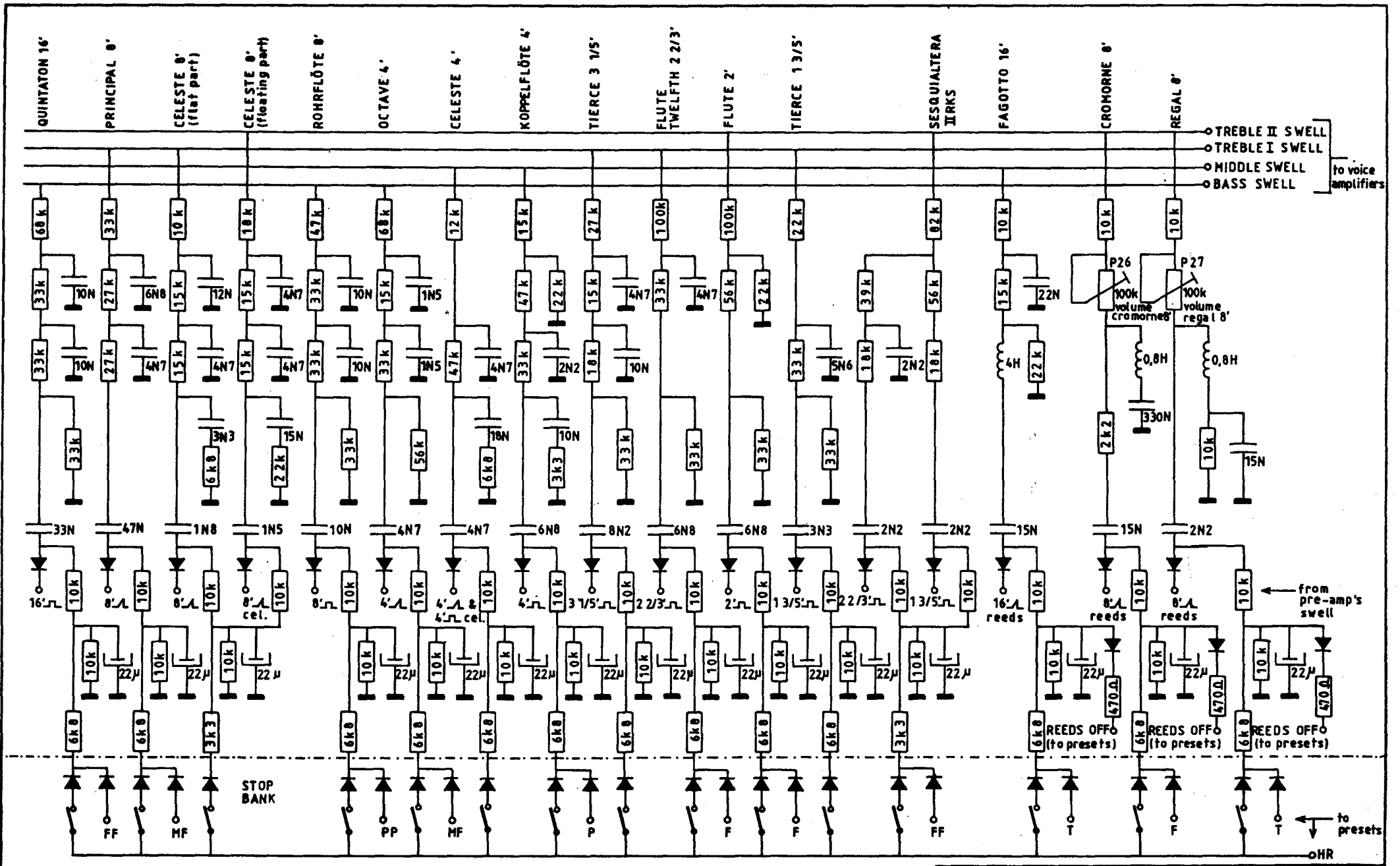
to pre-amp's

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KEYING SWELL

Drawn	Date	Modified	Date	JOHANNUS ORGAN OPUS 235
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				page: 19



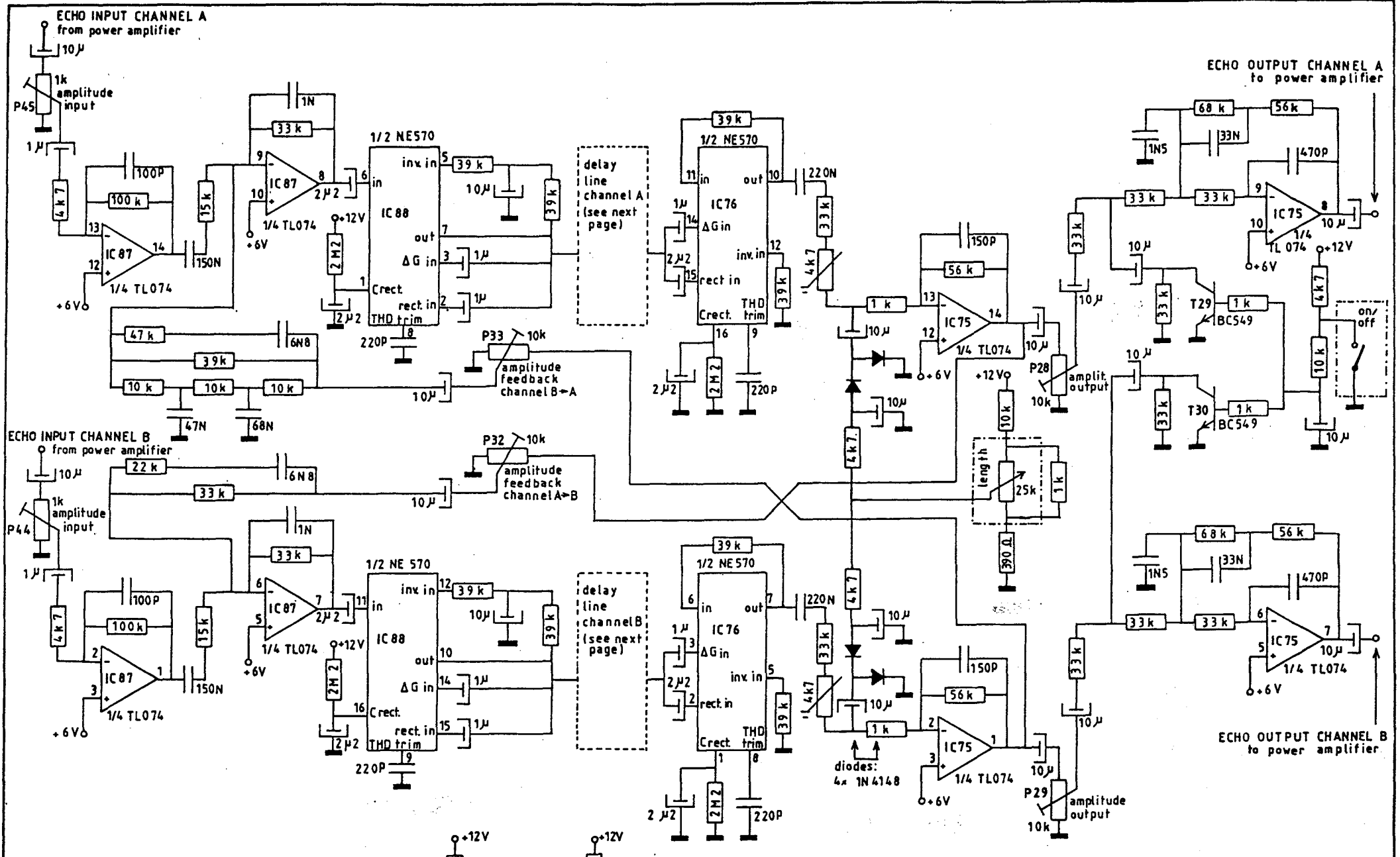


ALL DIODES: 1N4148

VOICES SWELL

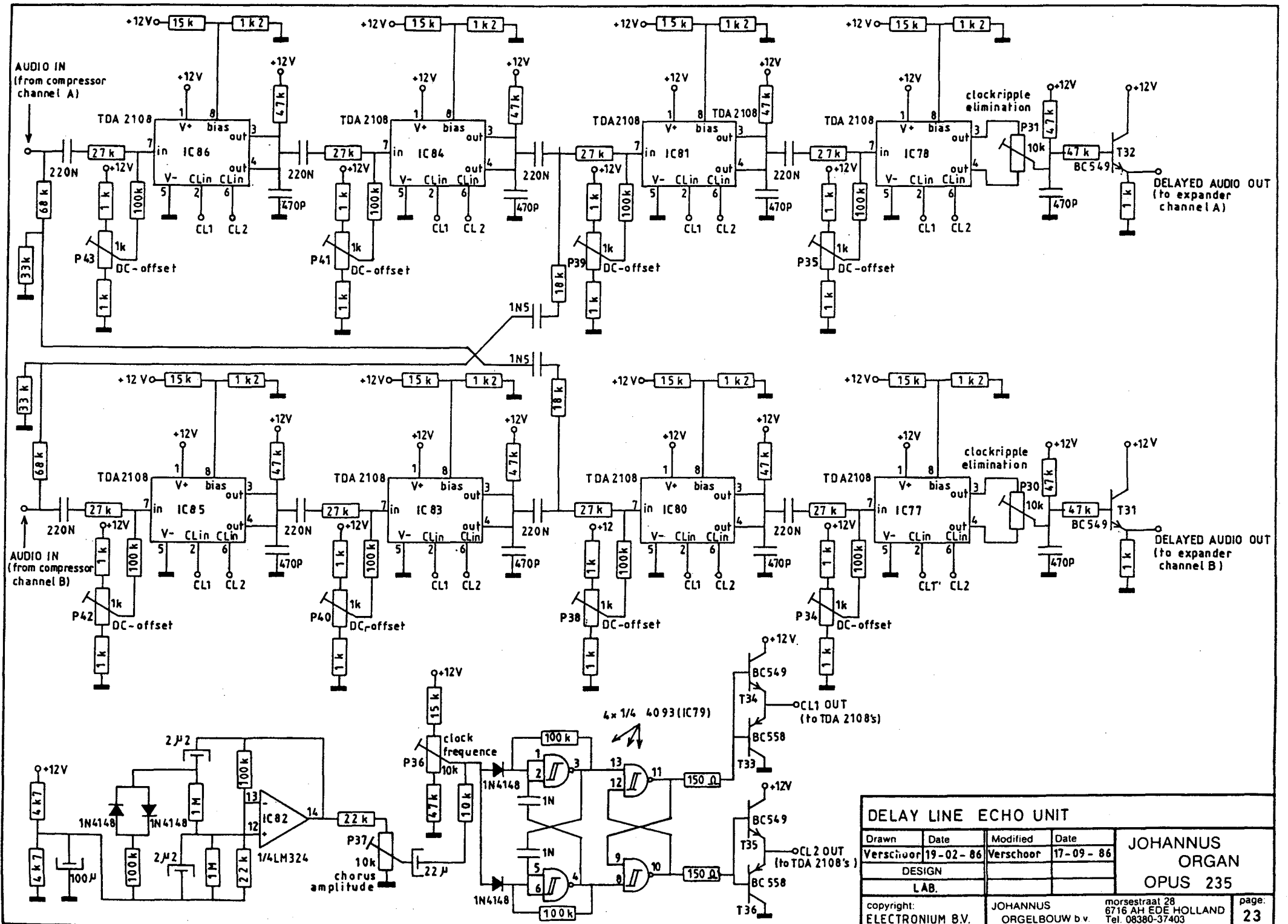
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OPUS 235**

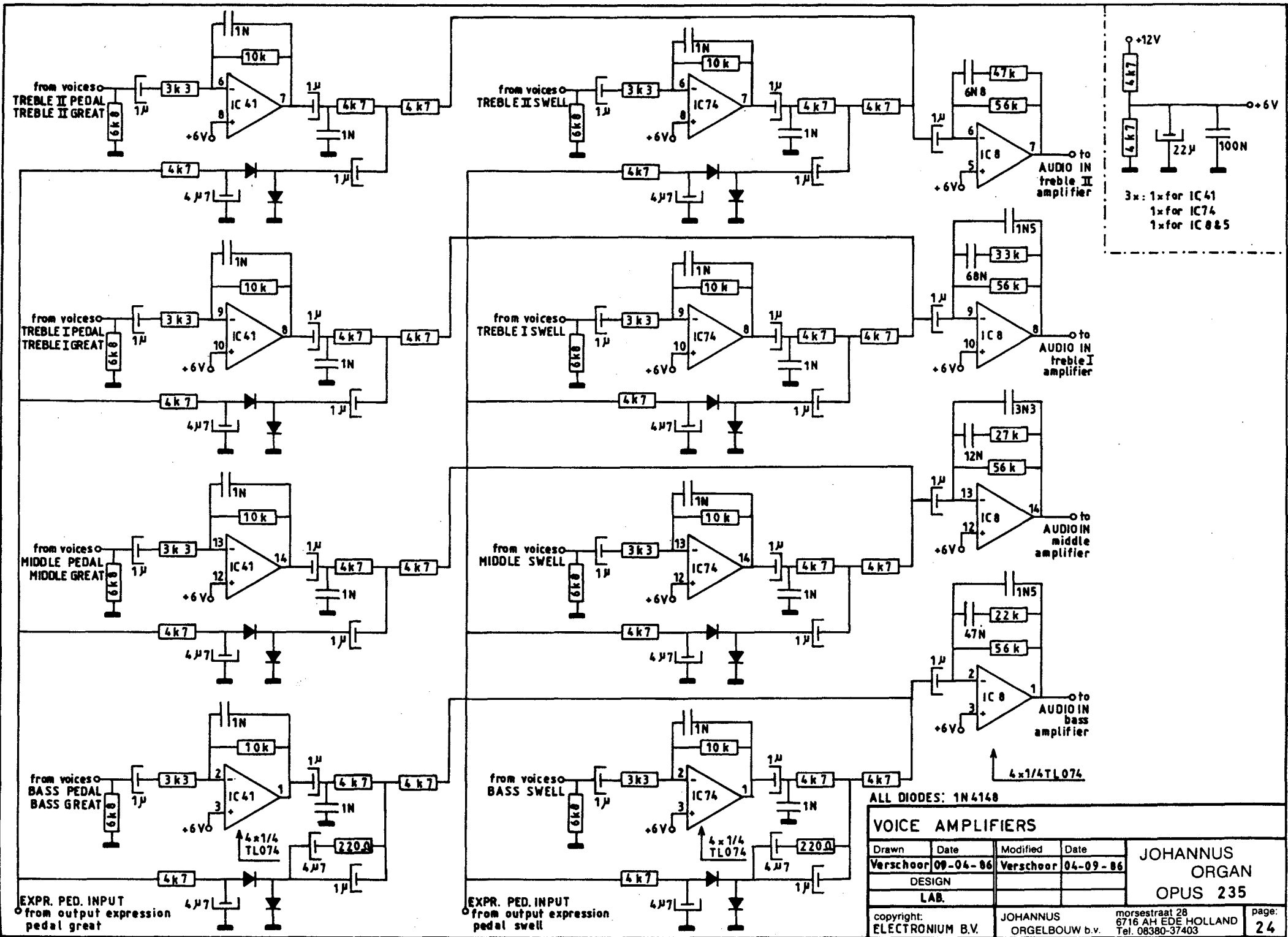


INPUT/OUTPUT CIRCUIT ECHO UNIT			
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DESIGN			
LAB.			
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		page:	22

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OPUS 235



DELAY LINE ECHO UNIT				JOHANNUS ORGAN OPUS 235
Drawn	Date	Modified	Date	
Verschoor	19-02-86	Verschoor	17-09-86	
DESIGN				
LAB.				
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ELECTRONIUM B.V.	ORGELBOUW b.v.		6716 AH EDE HOLLAND	23
			Tel. 08380-37403	

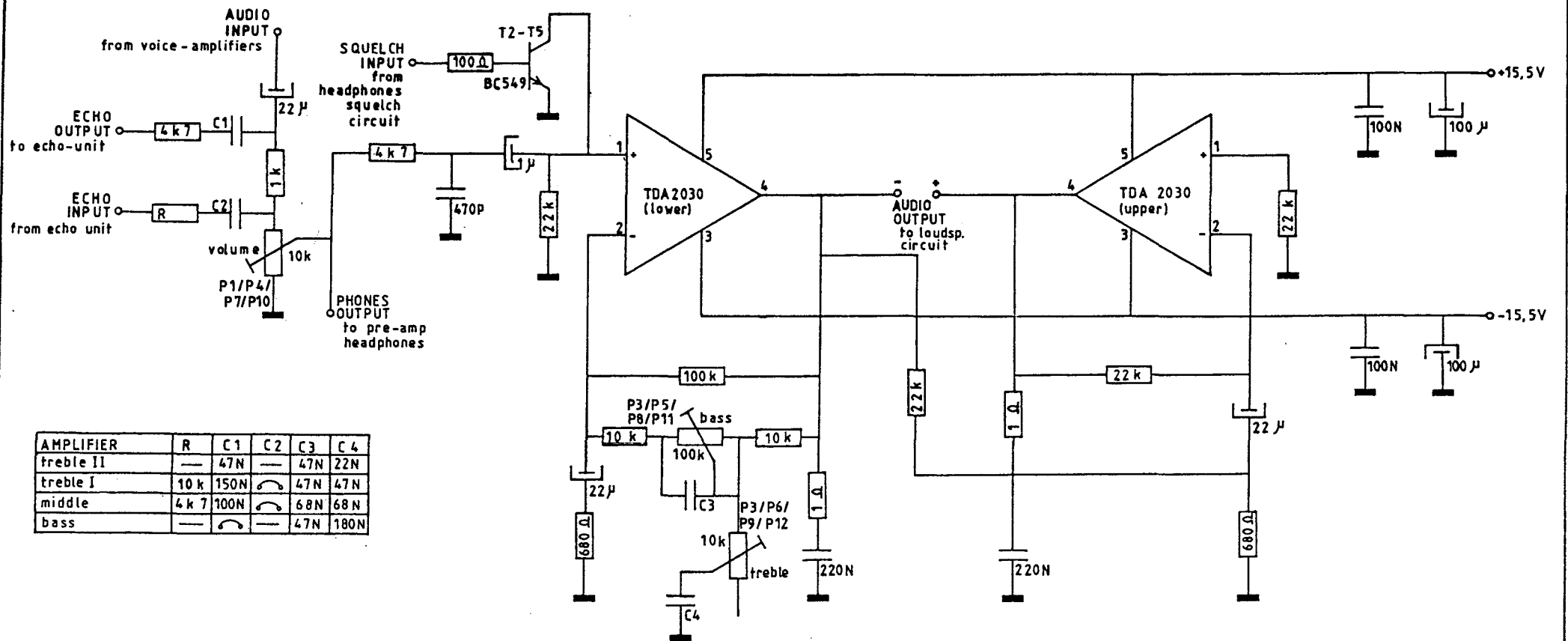


3x: 1x for IC41
 1x for IC74
 1x for IC8 & 5

ALL DIODES: 1N4148

VOICE AMPLIFIERS

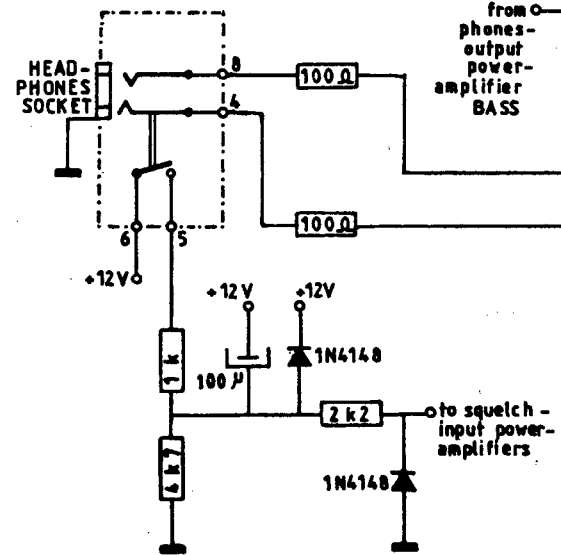
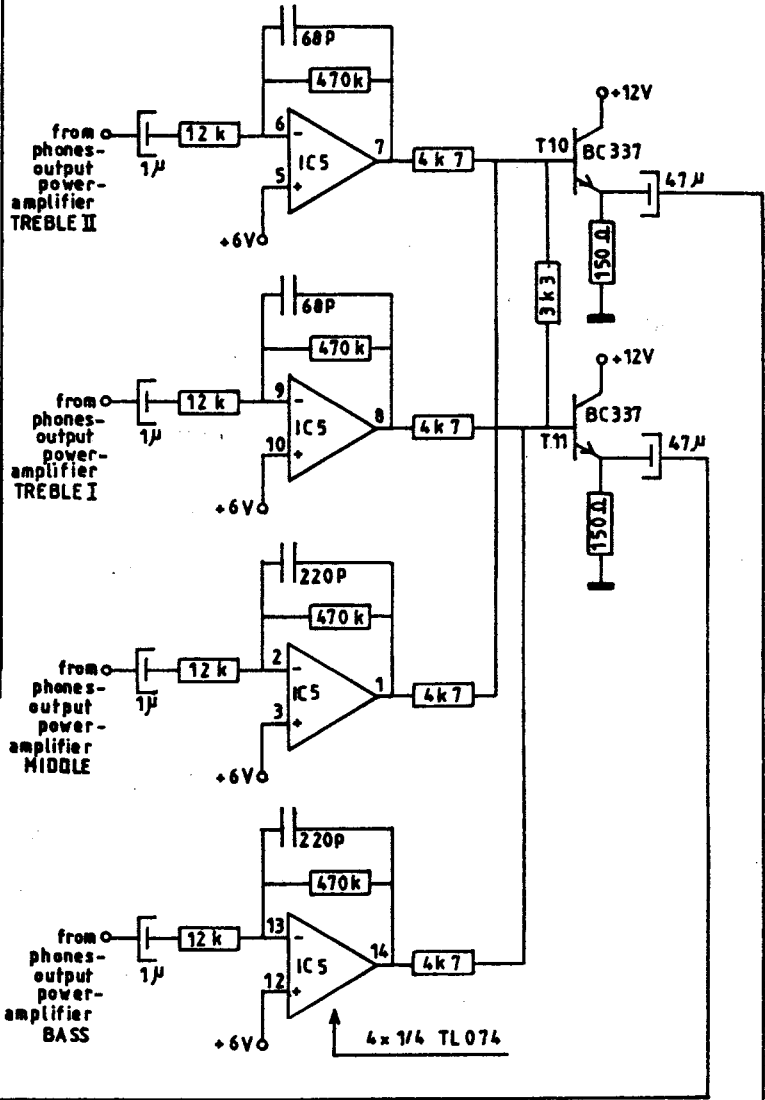
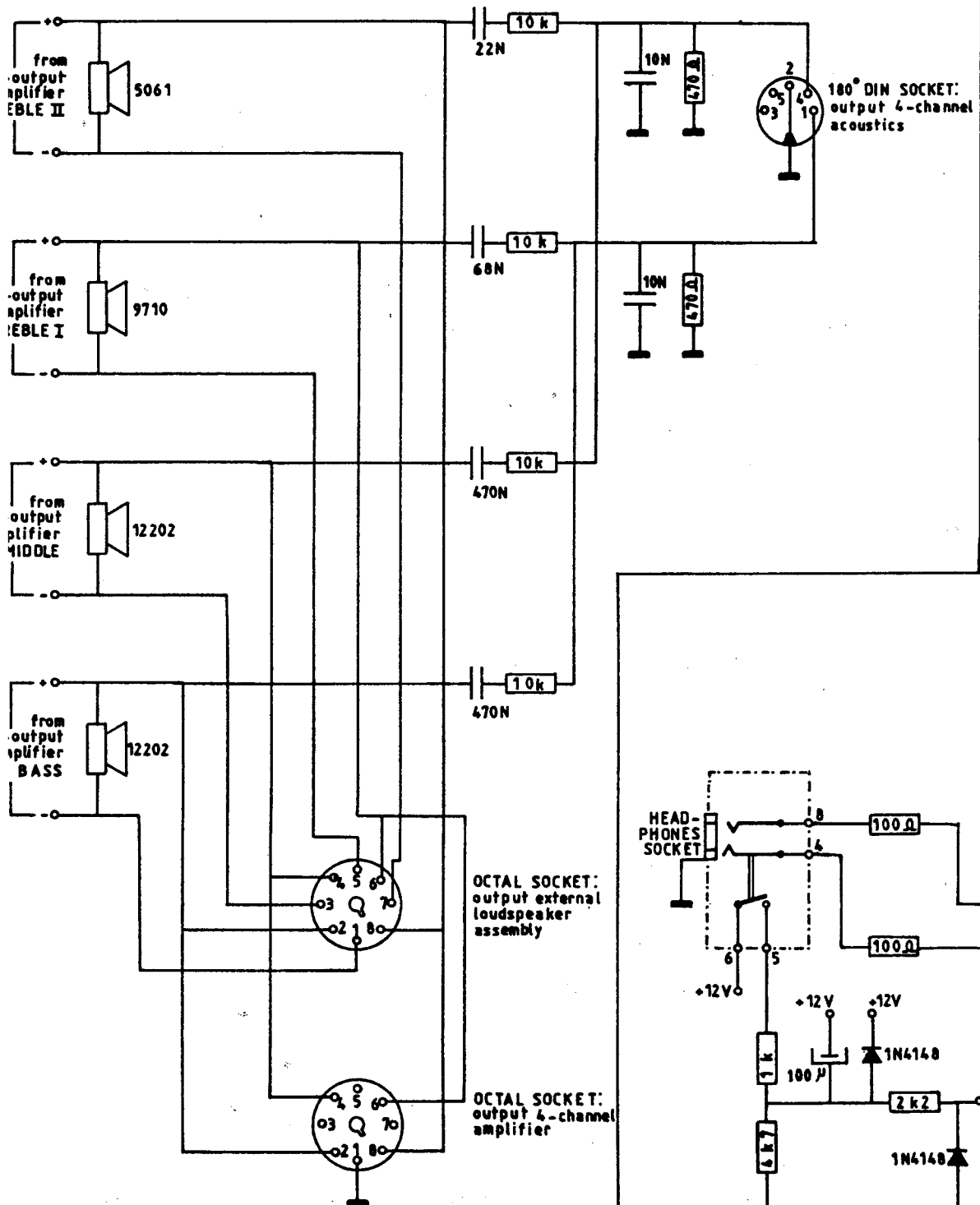
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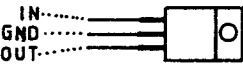
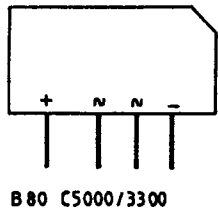
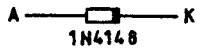
AMPLIFIER	R	C1	C2	C3	C4
treble II	—	47N	—	47N	22N
treble I	10 k	150N	↷	47N	47N
middle	4 k 7	100N	↷	68N	68N
bass	—	↷	—	47N	180N

POWER - AMPLIFIER (4 x)

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Verschoor	19-02-86			
DESIGN				
LAB				
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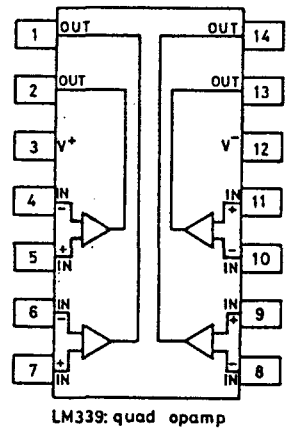
LOUDSPEAKER- & HEADPHONES - CIRCUIT			
Drawn	Date	Modified	Date
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DESIGN			
LAB.			
copyright: ELECTRONIUM B.V.		JOHANNUS ORGELBOUW b.v.	
		morsestraat 28 6716 AH EDE HOLLAND Tel. 08380-37403	
			page: 26



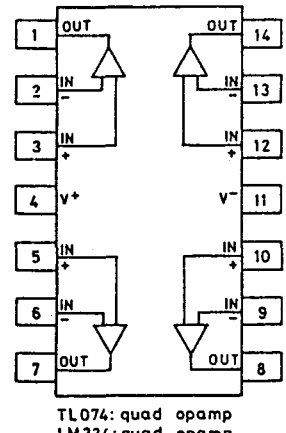
μA7812
μA7818



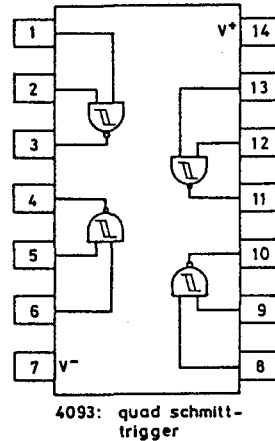
1=non-inverting input
2=inverting input
3=V⁻
4=output
5=V⁺ TDA 2030



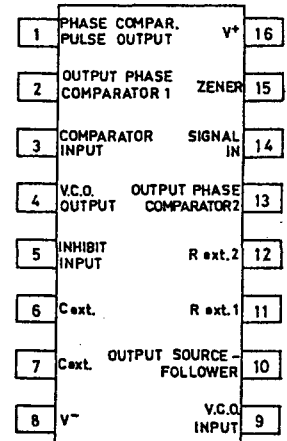
LM339: quad opamp



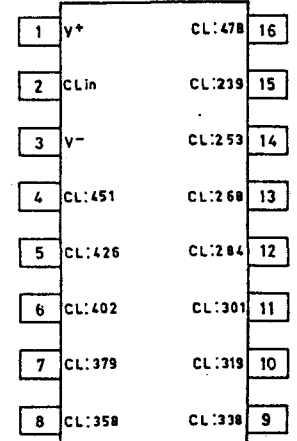
TL074: quad opamp
LM324: quad opamp



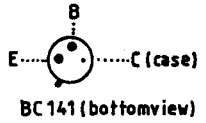
4093: quad schmitt-trigger



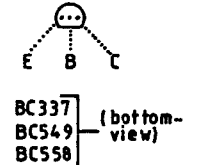
4046 phase locked loop circuit



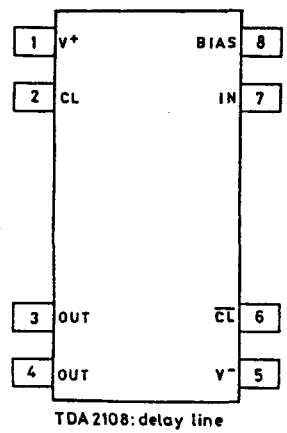
MO 83: top octave synthesizer



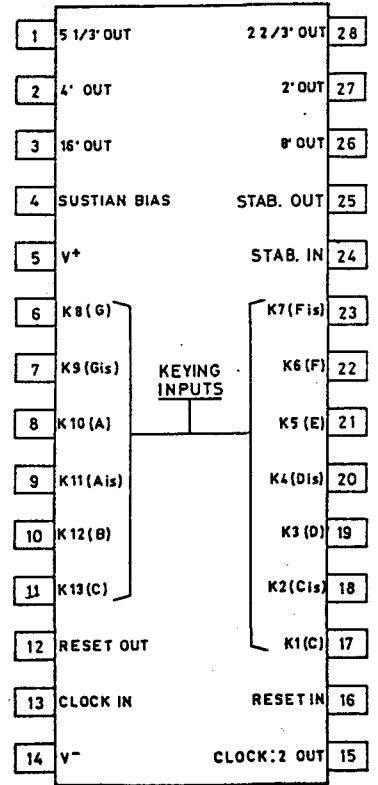
BC141 (bottom view)



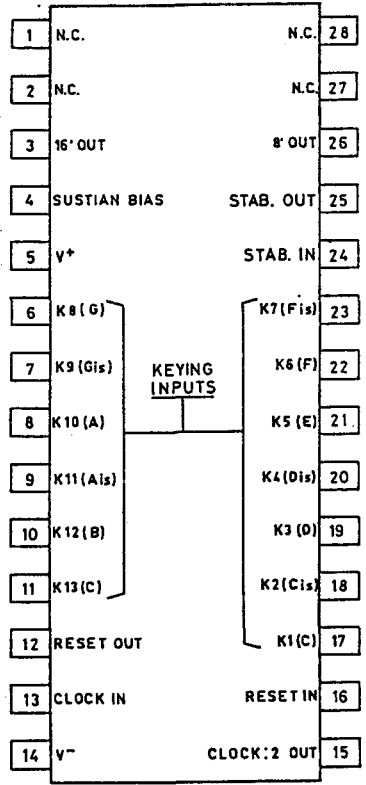
BC337
BC549
BC558 (bottom view)



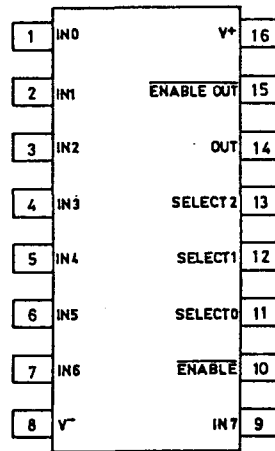
TDA 2108: delay line



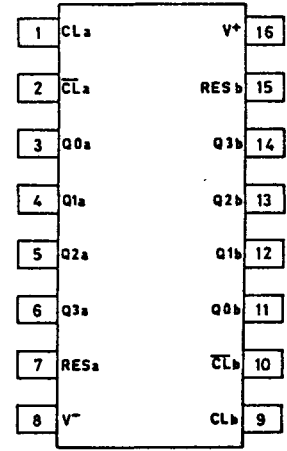
TMS 3617: top octave synthesizer with dividers and keyings



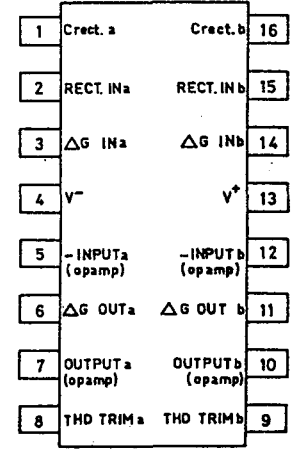
TMS 3615: top octave synthesizer with dividers and keyings



4512 8-input multiplexer with 3-stage output



4520 dual binary counter



NE 570: dual compandor

GENERAL INFORMATION SEMI-CONDUCTORS			
Drawn	Date	Modified	Date
Verschoor	10-04-86		
DESIGN			
JOHANNUS ORGAN OPUS 235			
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			page: 27