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= S C H E M A T I C D I A G R A M S =  
= J O H A N N U S =  
= O P U S 5 1 5 / 5 2 5 =  
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alterations reserved

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## A P P E N D I X I D I G I T A L V O I C E S

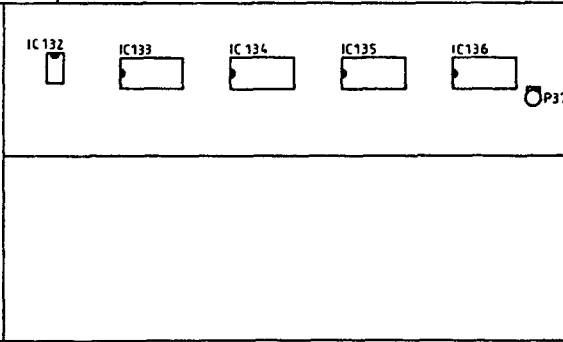
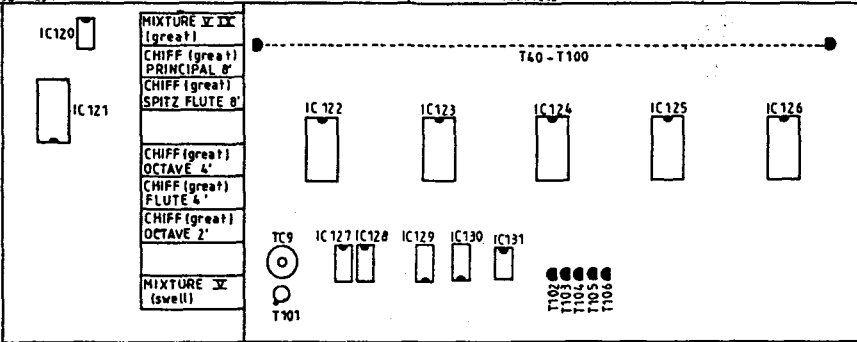
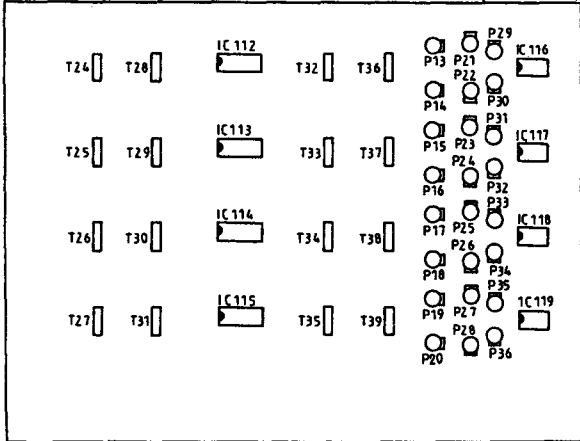
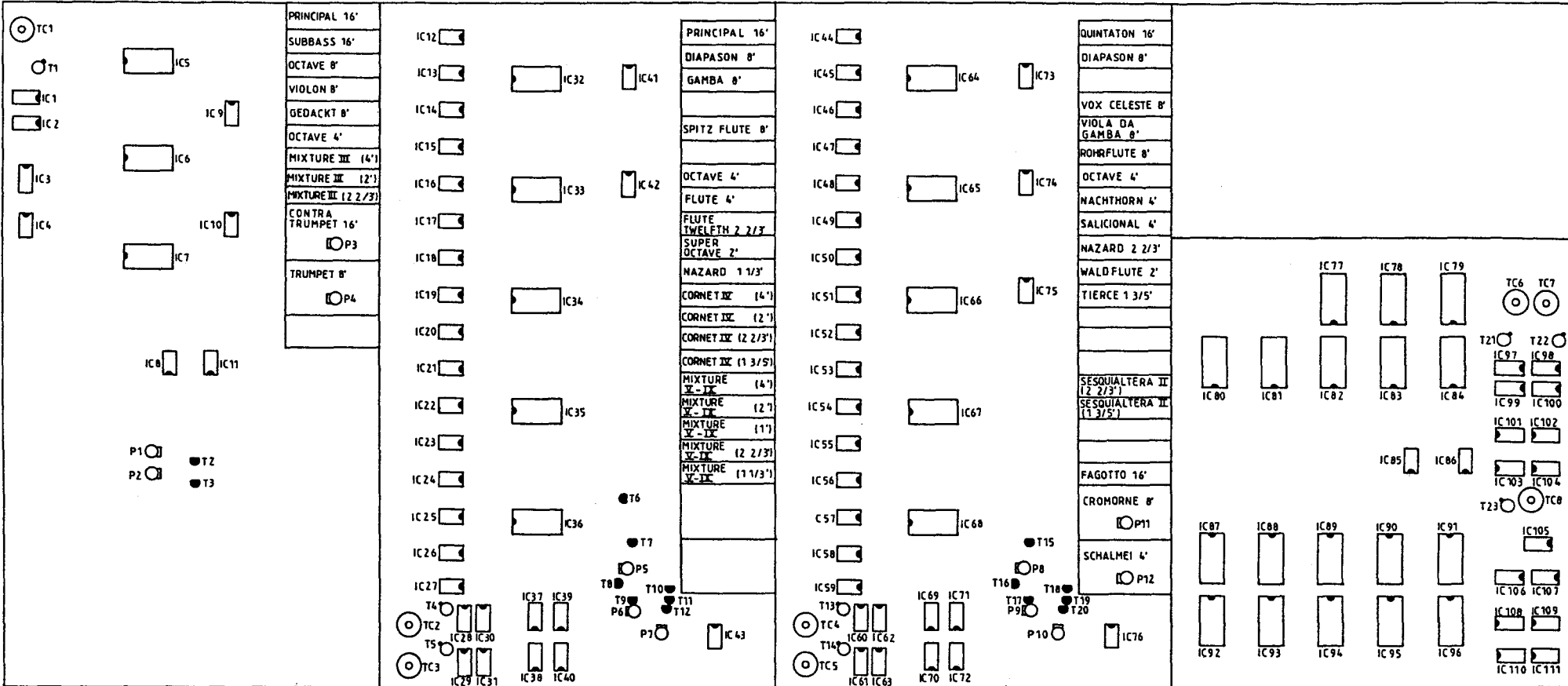
- I-1. POSITION DIAGRAM
- I-2. CONNECTOR PINNING MOTHERBOARD
- I-3. M.P.U.
- I-4. KEYING/STOPS/TRANSPOSER-INTERFACE &  
GENERATOR
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- I-6. NOISE GENERATOR
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- III-5. INTERFACE & GENERAL CRESCENDO CIRCUIT
- III-6. GENERAL INFORMATION SEMI-CONDUCTORS



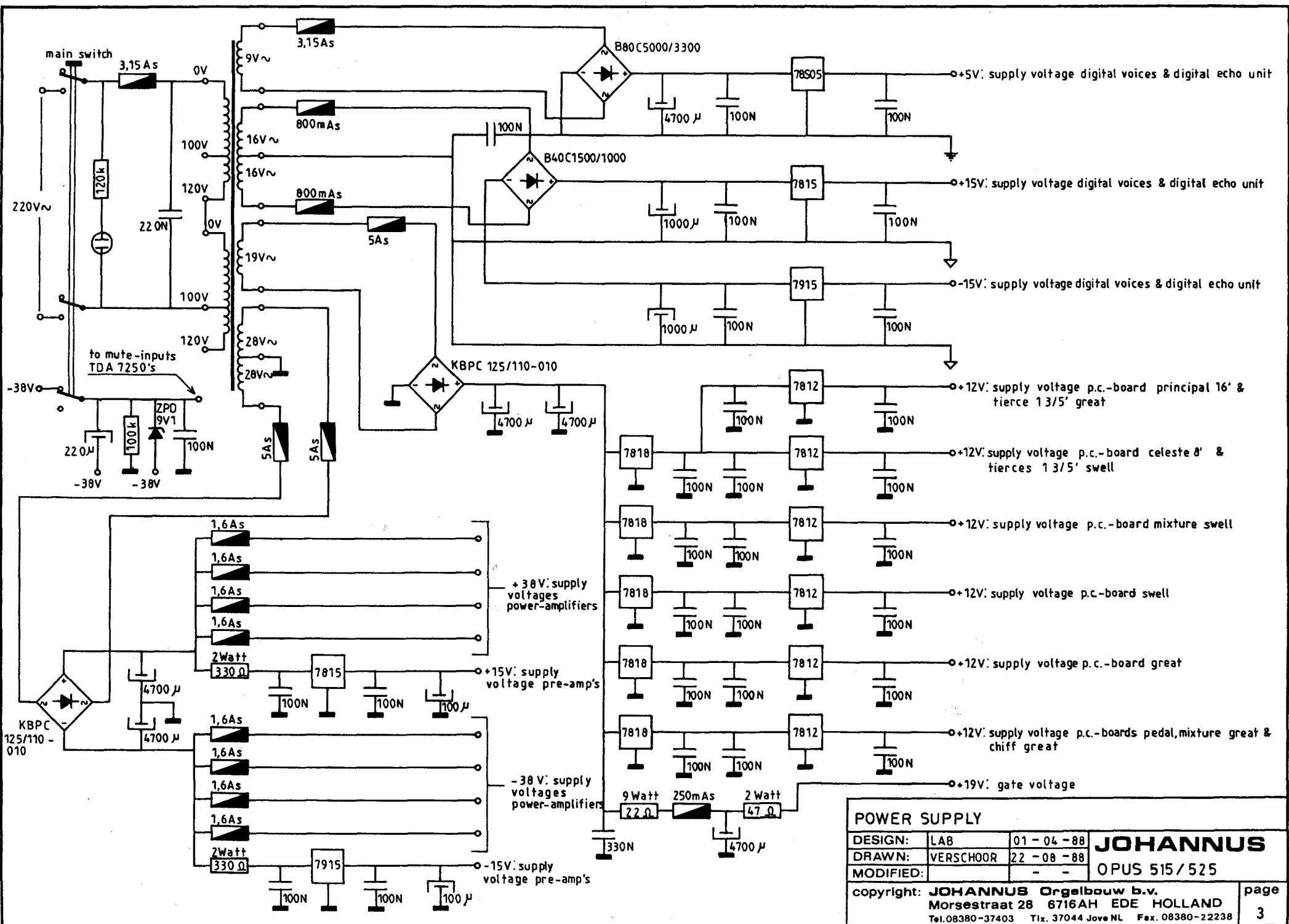
P1: linearity expression pedal swell  
 P2: linearity expression pedal great  
 P3: volume contra trumpet 16' pedal  
 P4: volume trumpet 8' pedal  
 P5: tremulant speed great  
 P6: hich depth great  
 P7: tremulant depth great  
 P8: tremulant speed swell  
 P9: hick depth swell  
 P10: tremulant depth swell  
 P11: volume fagotto 16' swell  
 P12: volume cromorne 8' swell  
 P13: volume power amplifier reeds a  
 P14: volume power amplifier reeds b  
 P15: volume power amplifier treble swell  
 P16: volume power amplifier treble great  
 P17: volume power amplifier middle swell  
 P18: volume power amplifier middle great  
 P19: volume power amplifier bass swell  
 P20: volume power amplifier bass great  
 P21: bass adjustment reeds a  
 P22: bass adjustment reeds b  
 P23: bass adjustment treble swell  
 P24: bass adjustment treble great  
 P25: bass adjustment middle swell  
 P26: bass adjustment middle great  
 P27: bass adjustment bass swell  
 P28: bass adjustment bass great  
 P29: treble adjustment reeds a  
 P30: treble adjustment reeds b  
 P31: treble adjustment treble swell  
 P32: treble adjustment treble great  
 P33: treble adjustment middle swell  
 P34: treble adjustment middle great  
 P35: treble adjustment bass swell  
 P36: treble adjustment bass great  
 P37: length chiff signal

T 1, 4, 5, 13, 14, 21, 22, 23, 101.....BC 141  
 T 2, 3, 6-12, 15-20, 102-106.....BC 549  
 T 24-27, 36-39.....TIP 147  
 T 28-35.....TIP 142  
 T 40-100.....BC 558

IC 1, 28, 29, 60, 61, 97, 98, 105, 127.....MO 83  
 IC 2, 30, 31, 62, 63, 99, 100, 106, 107, 128.....4512  
 IC 3, 37, 38, 69, 70, 101, 102, 108, 109, 129.....4046  
 IC 4, 39, 40, 71, 72, 103, 104, 110, 111, 130.....4520  
 IC 5-7, 32-36, 64-68, 121-126, 133-136.....TMS 3617  
 IC 8-11, 41-43, 73-76, 85, 86, 116-120, 131, 132.....TL 074  
 IC 12-27, 44-59.....LM 339  
 IC 77-84, 87-96.....TMS 3615  
 IC 112-115.....TDA 7250

TC1: tuning pedal  
 TC2: tuning 2nd, 4th & 5th octave great  
 TC3: tuning 1st & 3rd octave great  
 TC4: tuning 2nd & 4th octave swell  
 TC5: tuning 1st, 3rd & 5th octave swell  
 TC6: tuning principal 16' great  
 TC7: tuning tierce 1 3/5' great  
 TC8: tuning celeste 8' & tierces 1 3/5' swell  
 TC9: tuning mixture swell

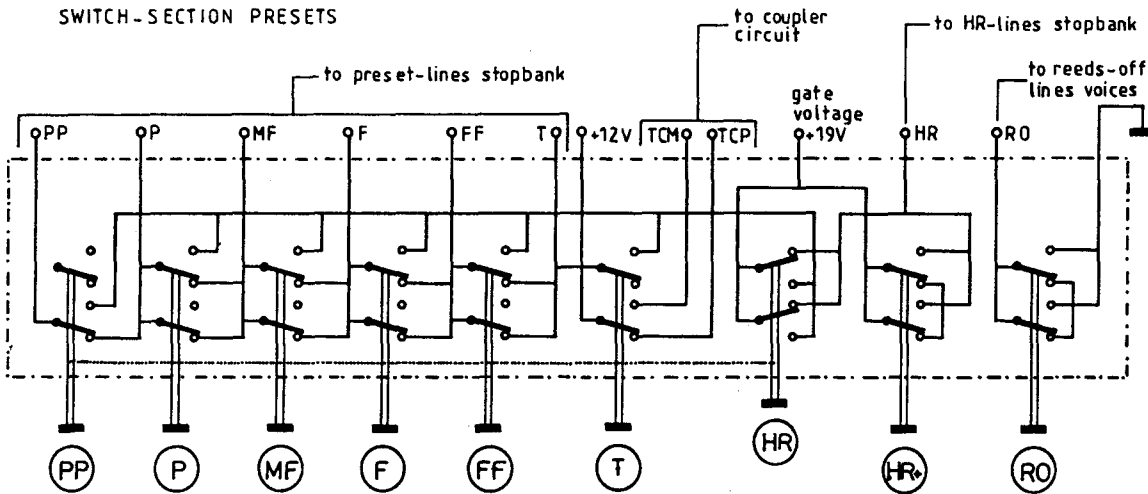
LEGEND POSITION DIAGRAM			
DESIGN:		- -	<b>JOHANNUS</b>
DRAWN:	VERSCHOOR	24-08-88	
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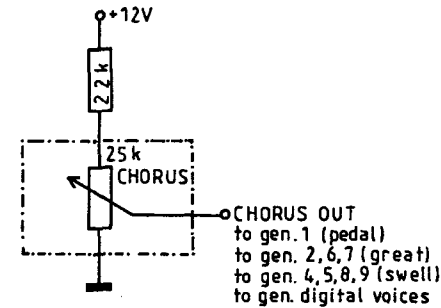
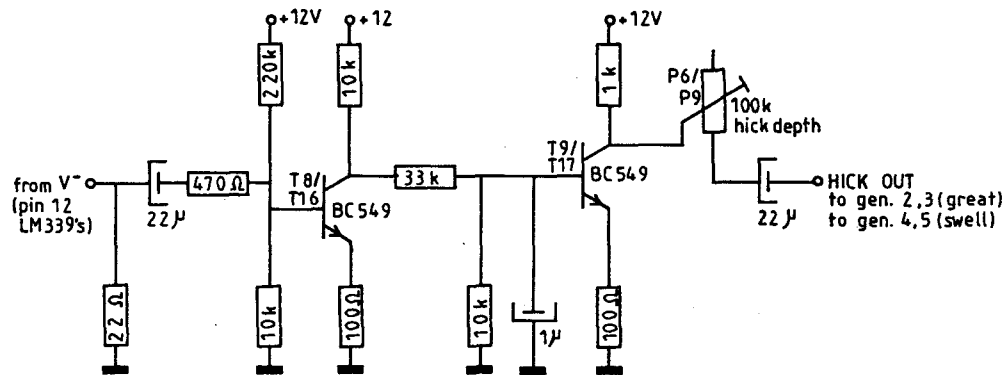
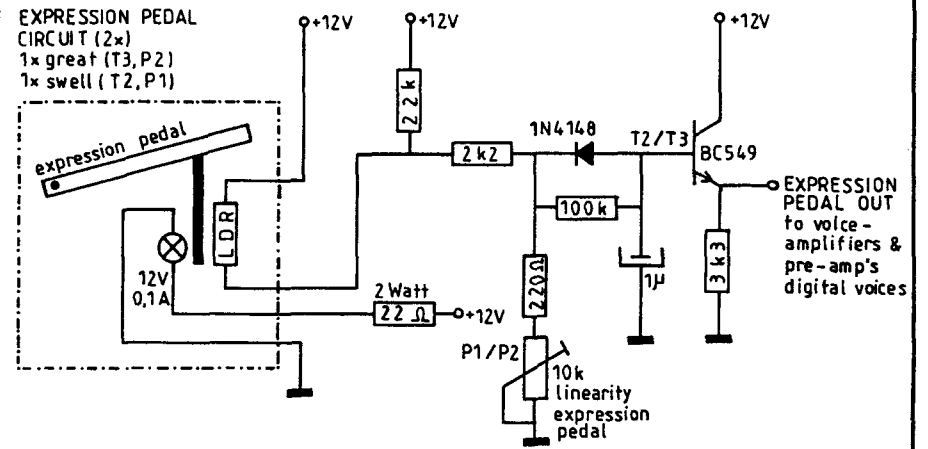
**POWER SUPPLY**

DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>
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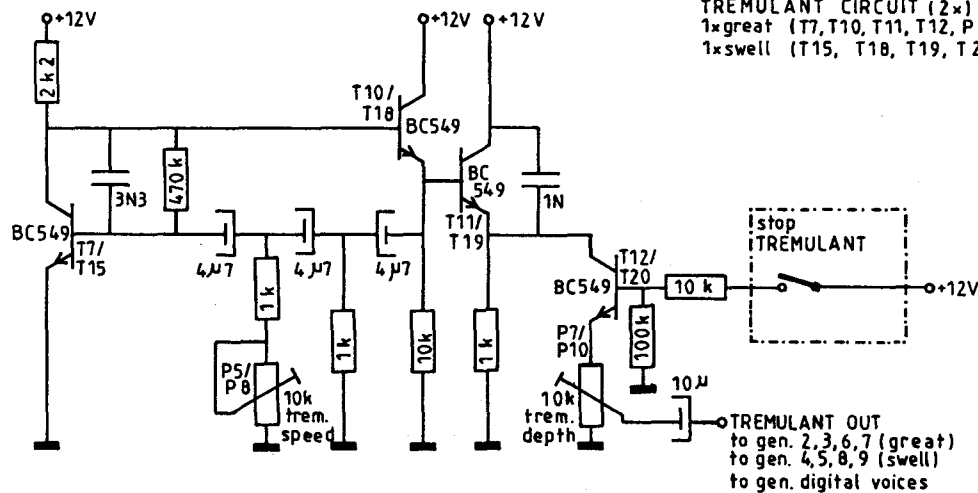
SWITCH-SECTION PRESETS



EXPRESSION PEDAL CIRCUIT (2x)  
1x great (T3, P2)  
1x swell (T2, P1)



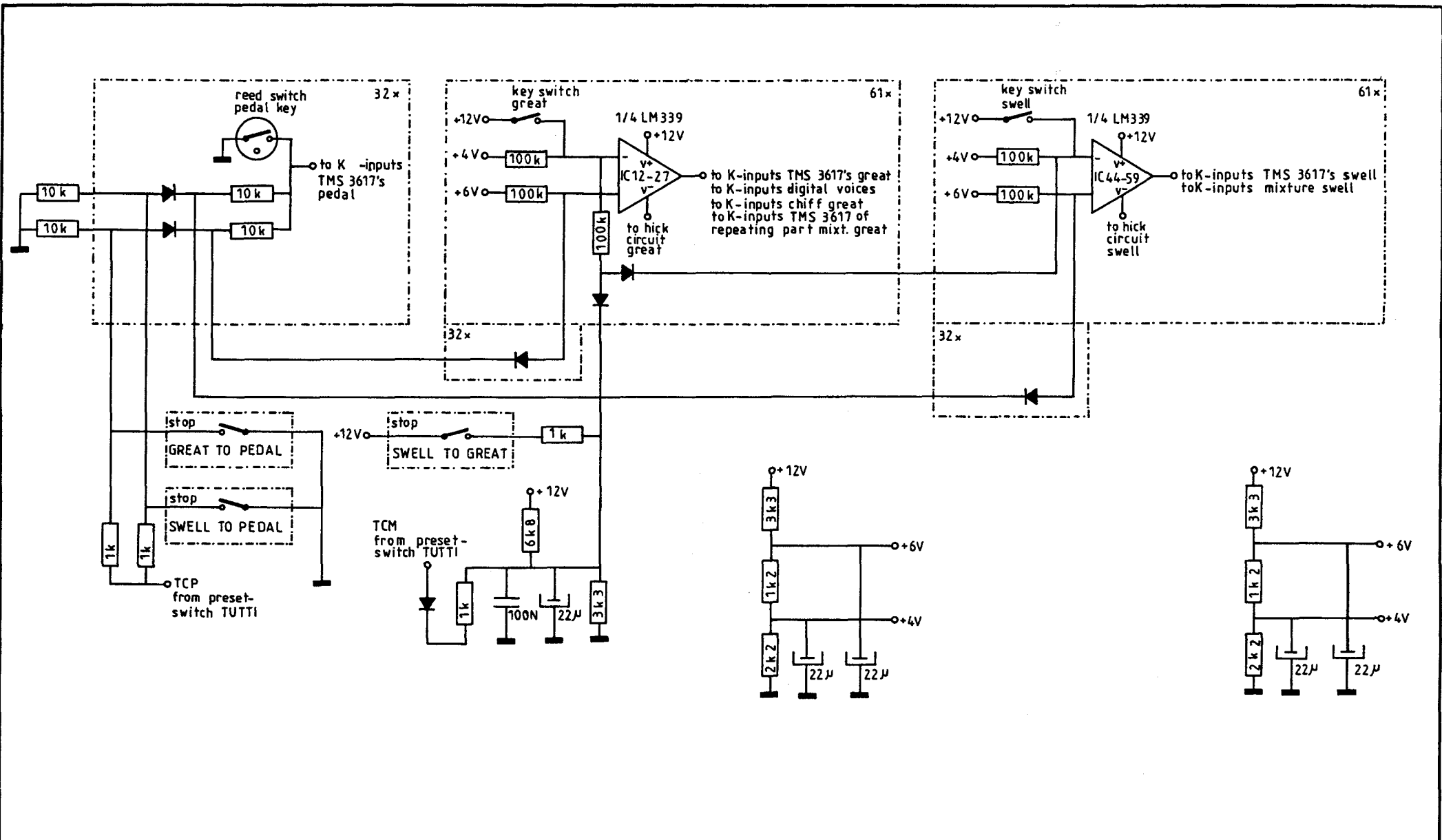
TREMULANT CIRCUIT (2x)  
1x great (T7, T10, T11, T12, P5, P7)  
1xswell (T15, T18, T19, T20, P8, P10)



SWITCH-SECTION PRESETS, HICK-, TREMULANT-,

EXPRESSION PEDAL CIRCUIT & CHORUS

DESIGN:	LAB	01-04-88	<b>JOHANNUS</b> OPUS 515/525
DRAWN:	VERSCHOOR	25-08-88	
MODIFIED:	-	-	

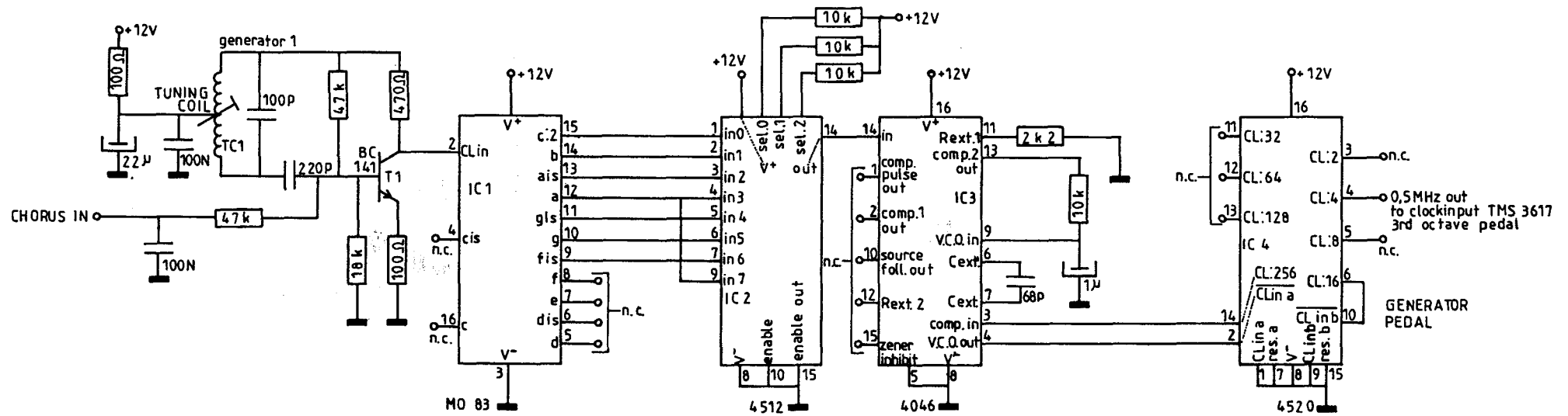
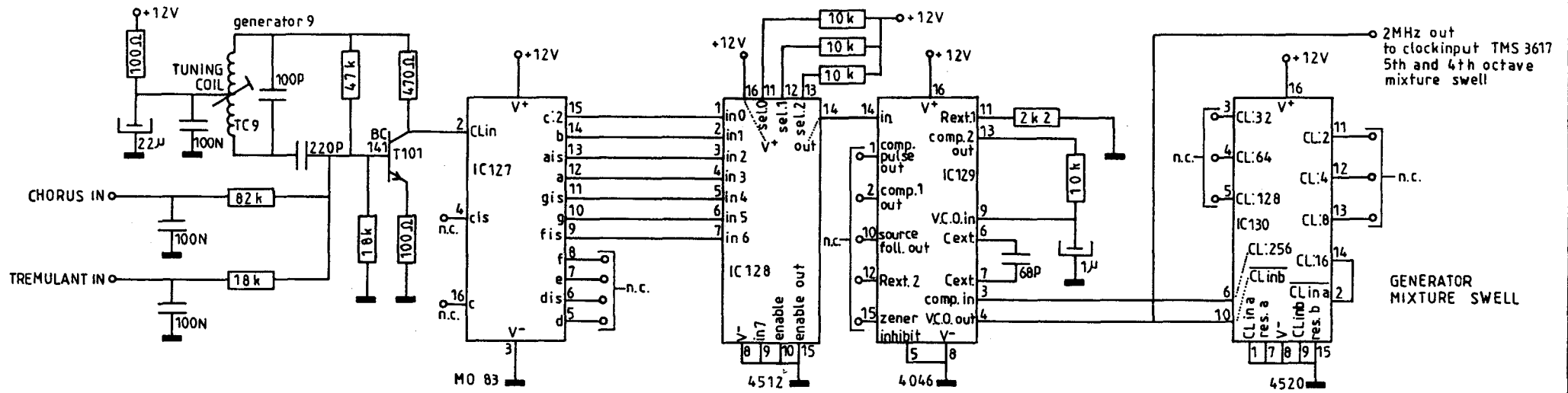


ALL DIODES 1N4148

COUPLER CIRCUIT

DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>
DRAWN:	VERSCHOOR	25-04-88	
MODIFIED:	-	-	
			OPUS 515/525

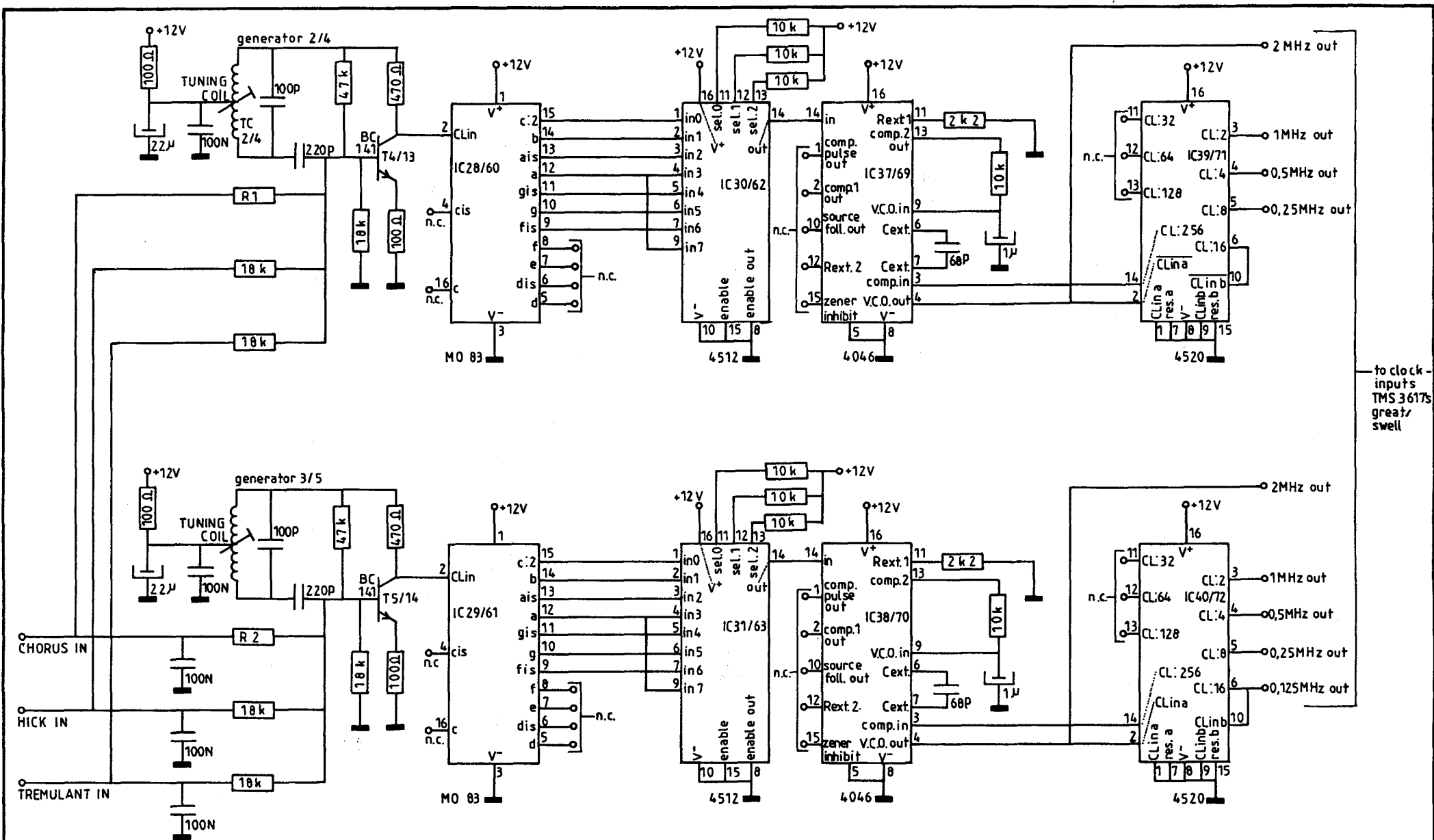
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**GENERATOR MIXTURE SWELL & GENERATOR PEDAL**

DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>
DRAWN:	VERSCHOOR	28-08-88	
MODIFIED:			
			OPUS 515/525



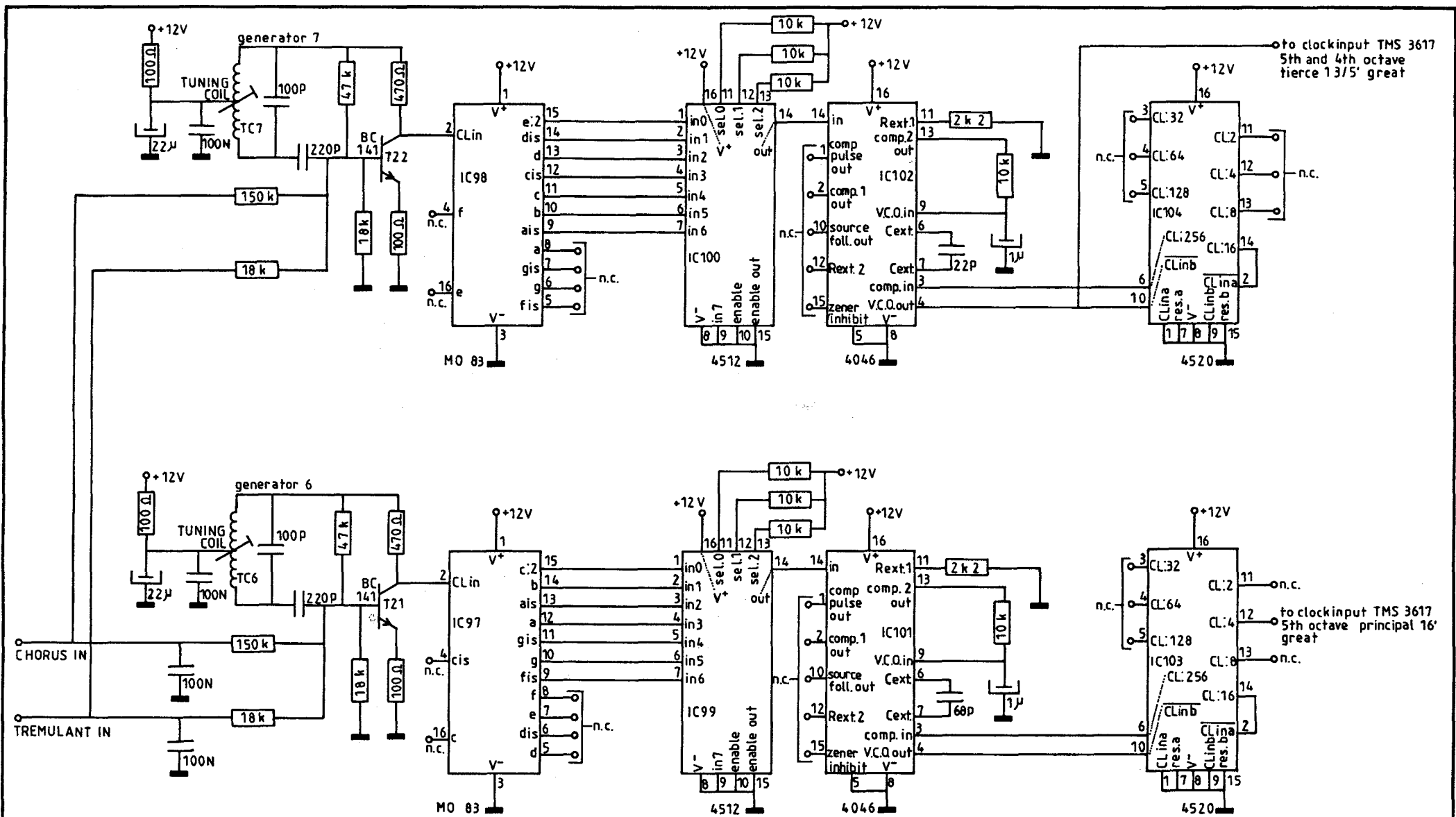


to clock-  
inputs  
TMS 3617S  
great/  
swell

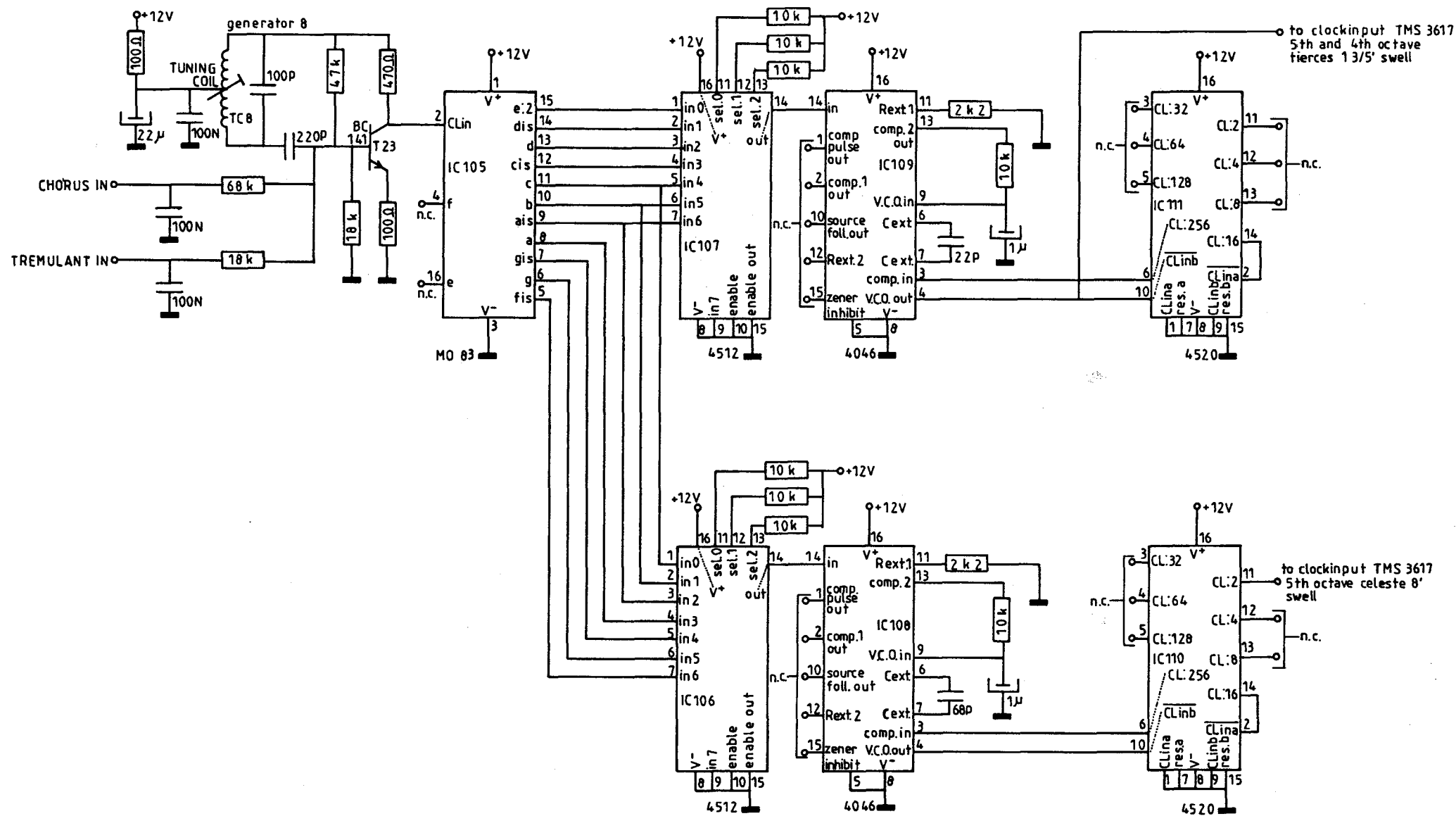
GENERATORS MANUALS (2x)  
 1x great (TC 2, TC 3, T 4, T 5, IC 28, IC 30, IC 31, IC 37, IC 38, IC 39, IC 40)  
 1x swell (TC 4, TC 5, T 13, T 14, IC 60, IC 61, IC 62, IC 63, IC 69, IC 70, IC 71, IC 72)

generator 2: R1=82k  
 4: R1=39k  
 3: R2=—  
 5: R2=100k

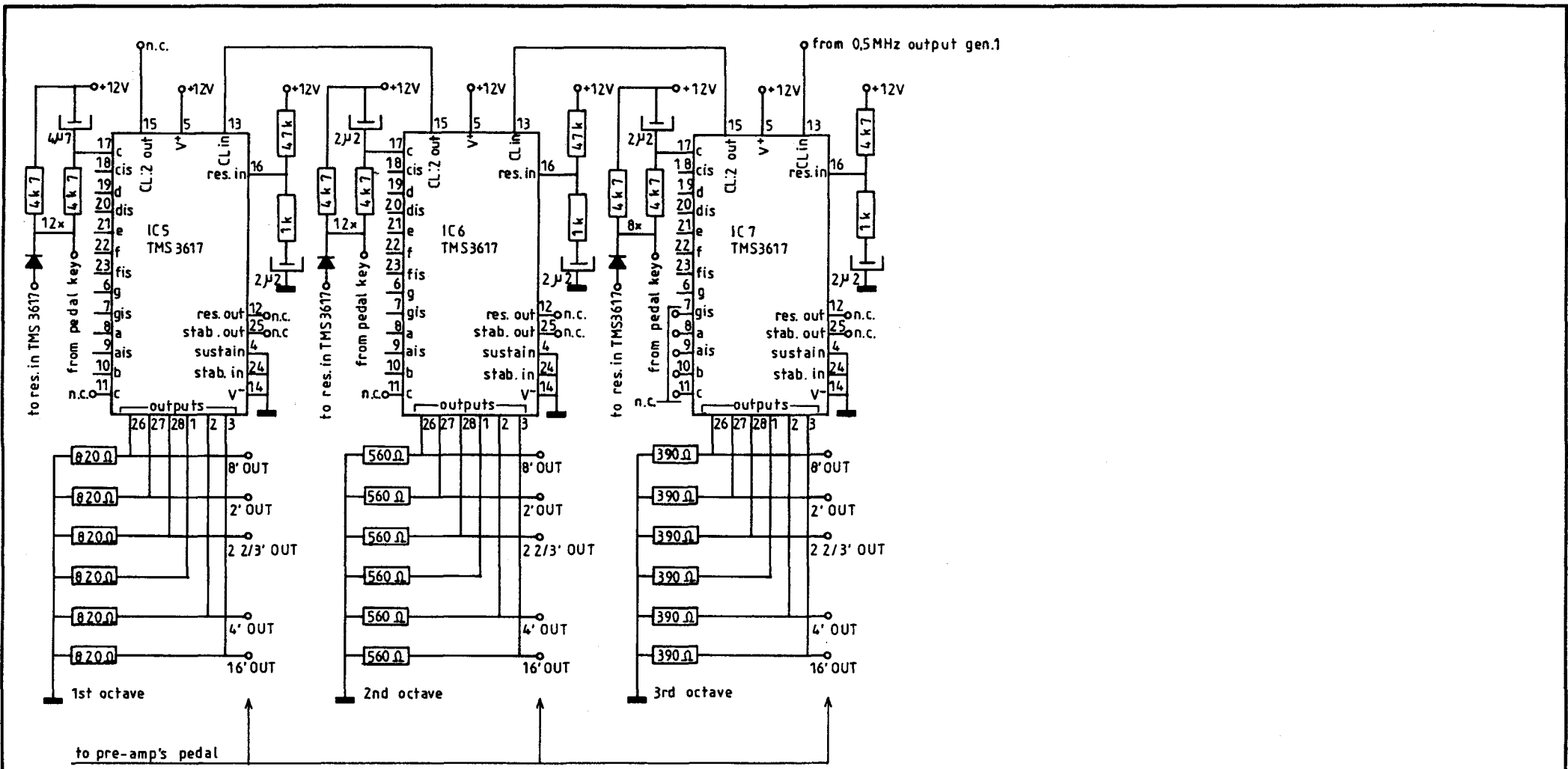
GENERATORS MANUALS			
DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>
DRAWN:	VERSCHOOR	29-08-88	
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GENERATOR TIERCE 13/5' GREAT & GENERATOR				
PRINCIPAL 16' GREAT				
DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>	
DRAWN:	VERSCHOOR	30-08-88	OPUS 515/525	
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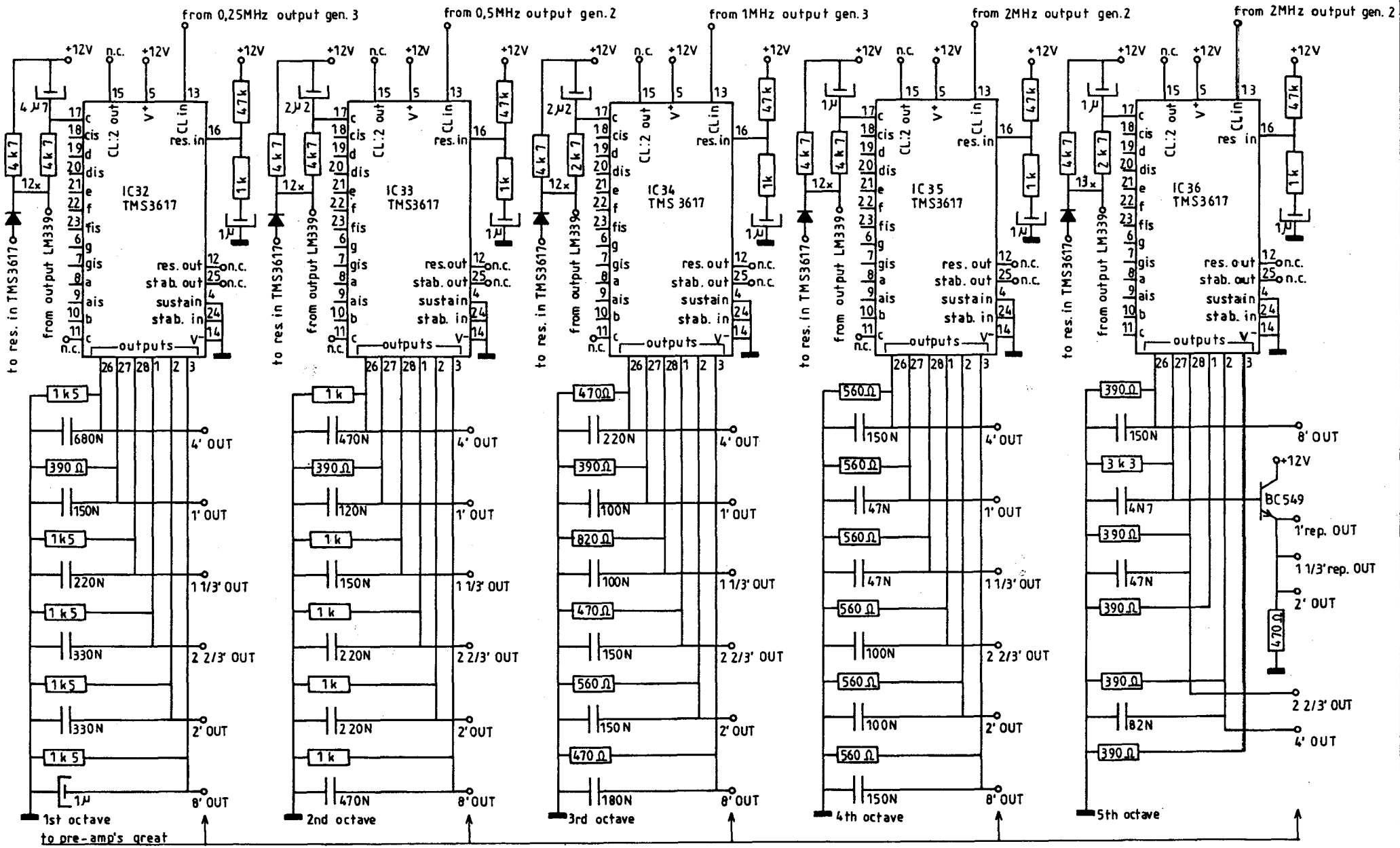


<b>GENERATOR TIERCES 13/5' &amp; CELESTE 8' SWELL</b>			
DESIGN:	LAB	01 - 04 - 88	<b>JOHANNUS</b> OPUS 515/525
DRAWN:	VERSCHOOR	30 - 08 - 88	
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ALL DIODES 1N4148

<b>KEYING PEDAL</b>		
DESIGN:	LAB	01-04-88
DRAWN:	VERSCHOOR	30-08-88
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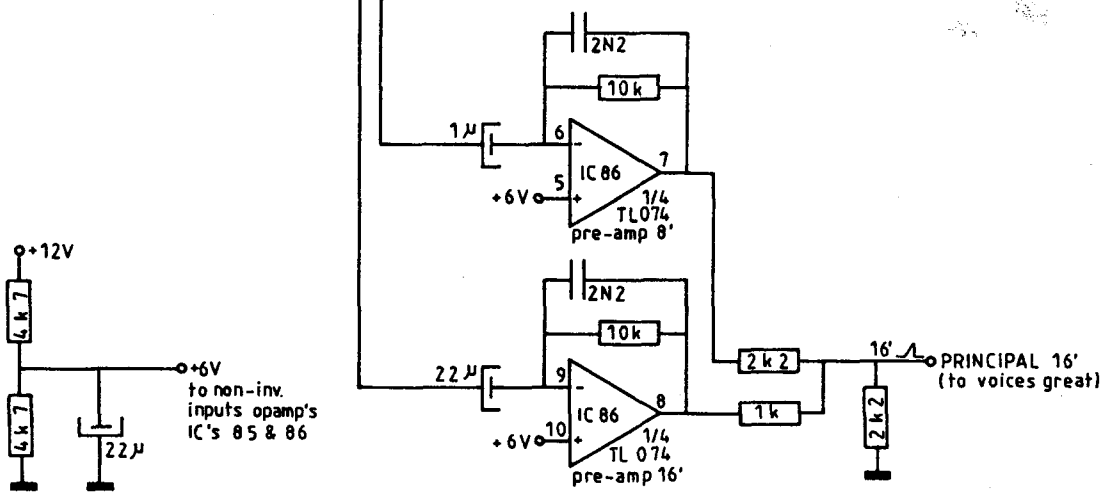
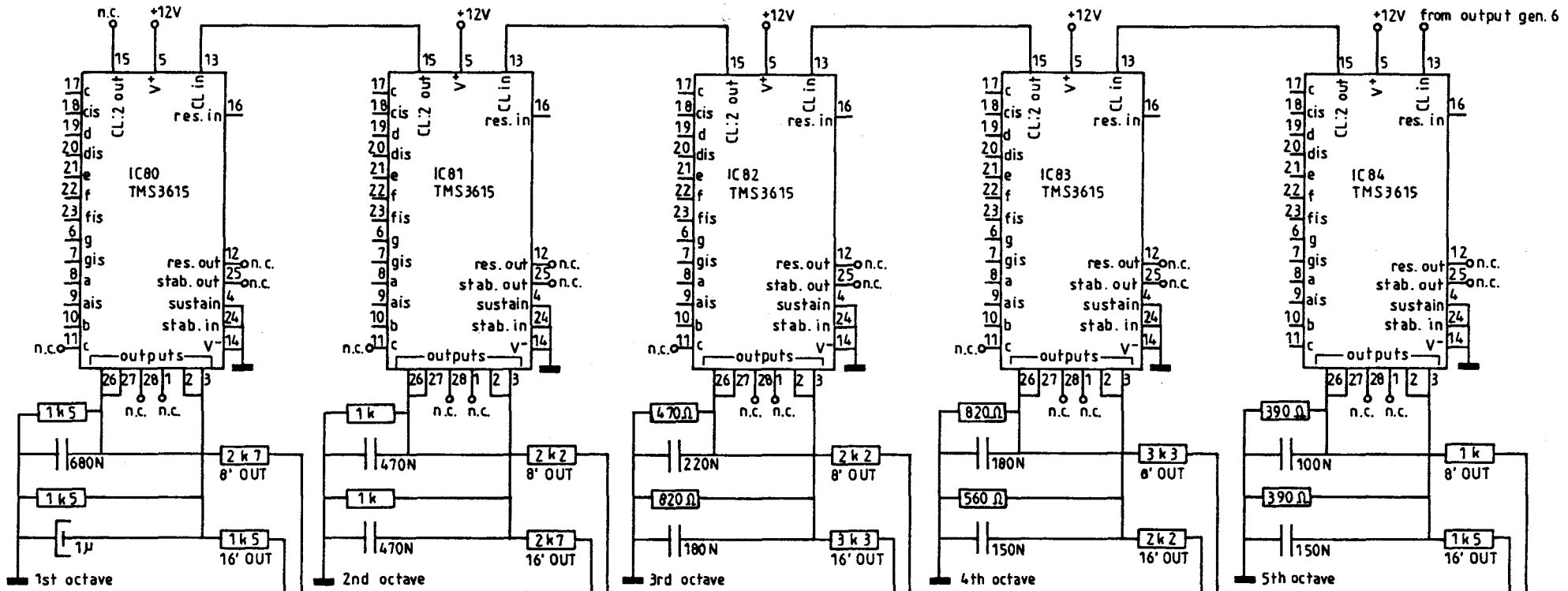


ALL DIODES 1N4148

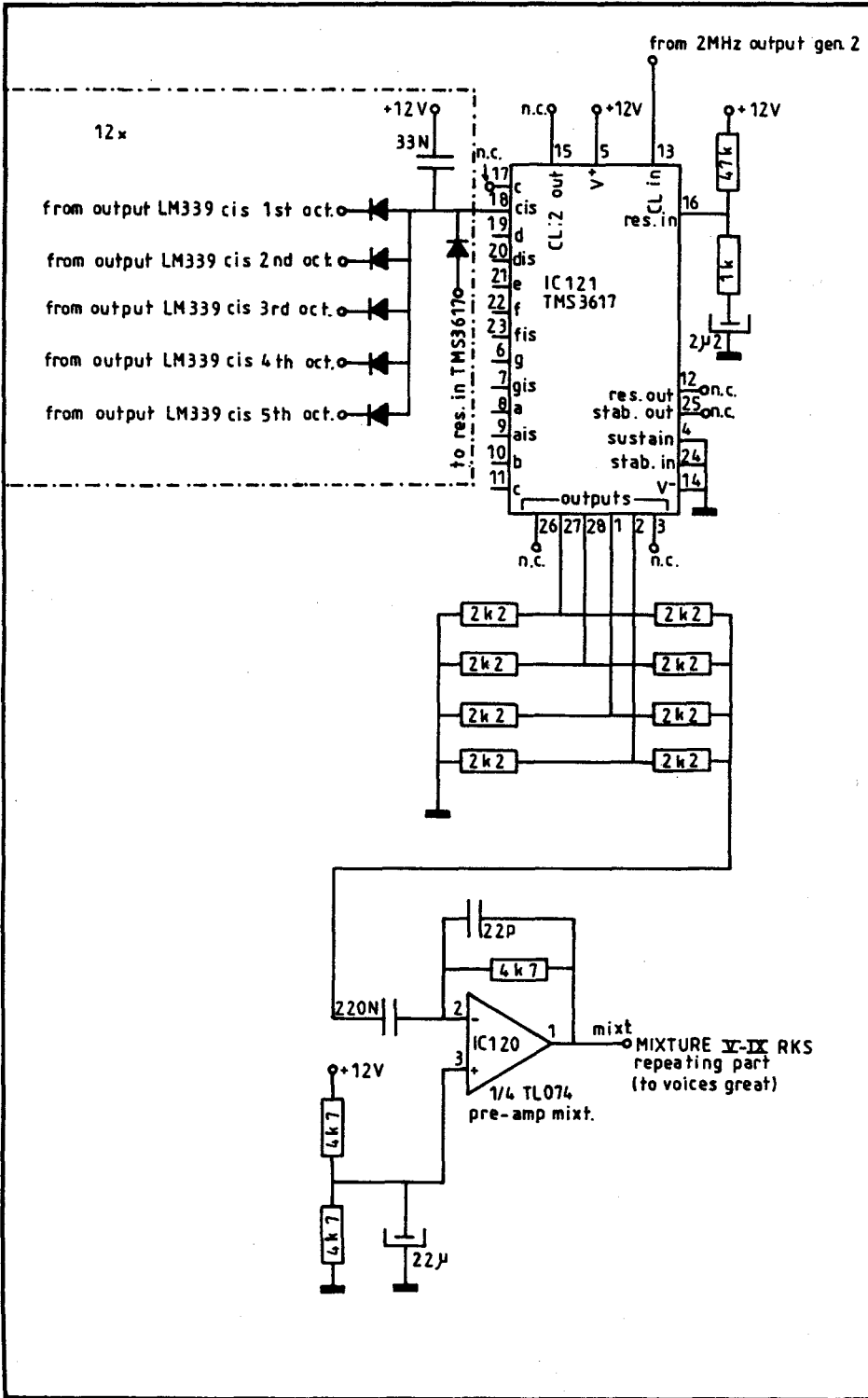
**KEYING GREAT**

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			page 11

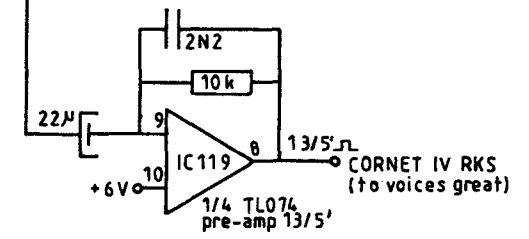
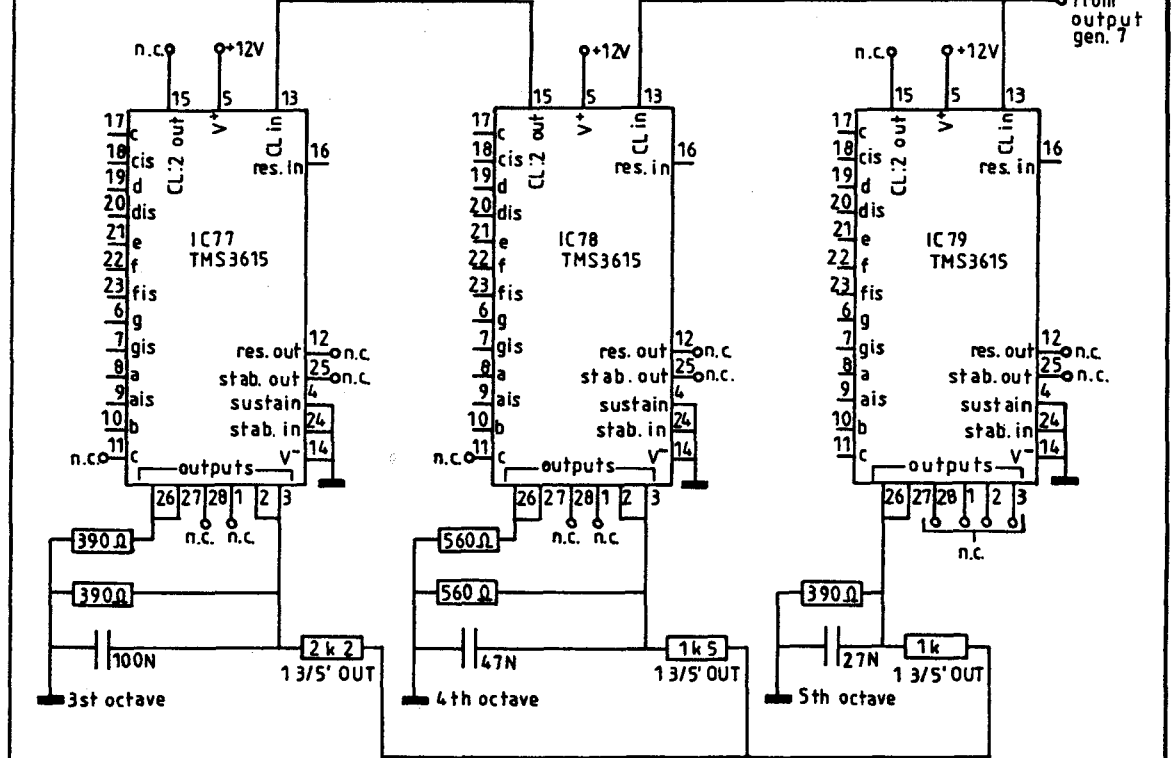
NOTE: the K-inputs (pin6-11 and pin17-23) and the reset-input (pin16) of the IC's TMS3615 are connected with the corresponding pins of the TMS3617's of keying great



<b>KEYING &amp; PRE-AMP'S PRINCIPAL 16' GREAT</b>			
DESIGN:	LAB	01-04-88	<b>JOHANNUS</b>
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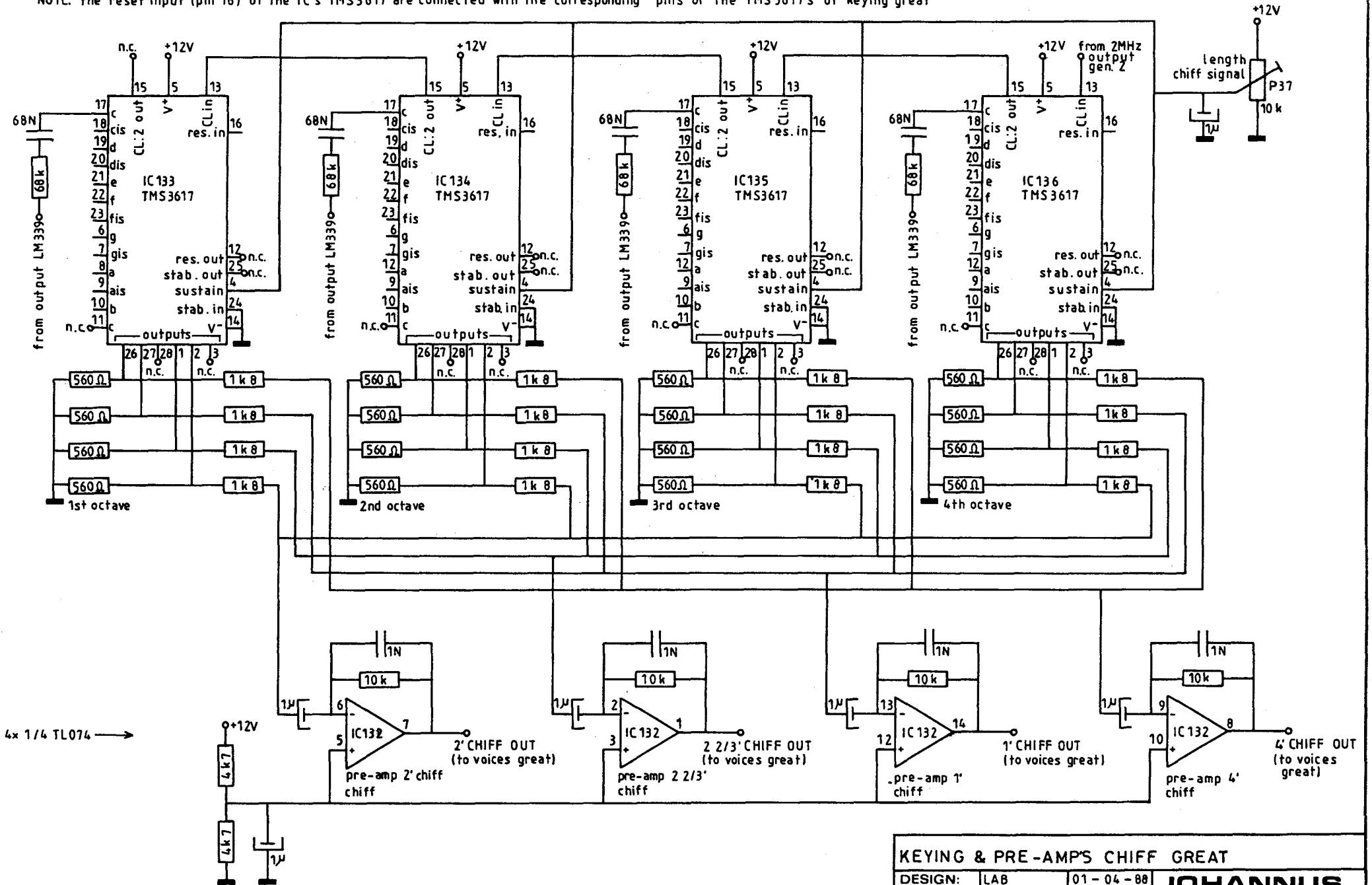


NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the IC's TMS3615 are connected with the corresponding pins of the TMS3617's of keying great



KEYING MIXTURE V-IX (repeating part) &		
TIERCE 13/5' GREAT		
DESIGN:	LAB	01-04-88
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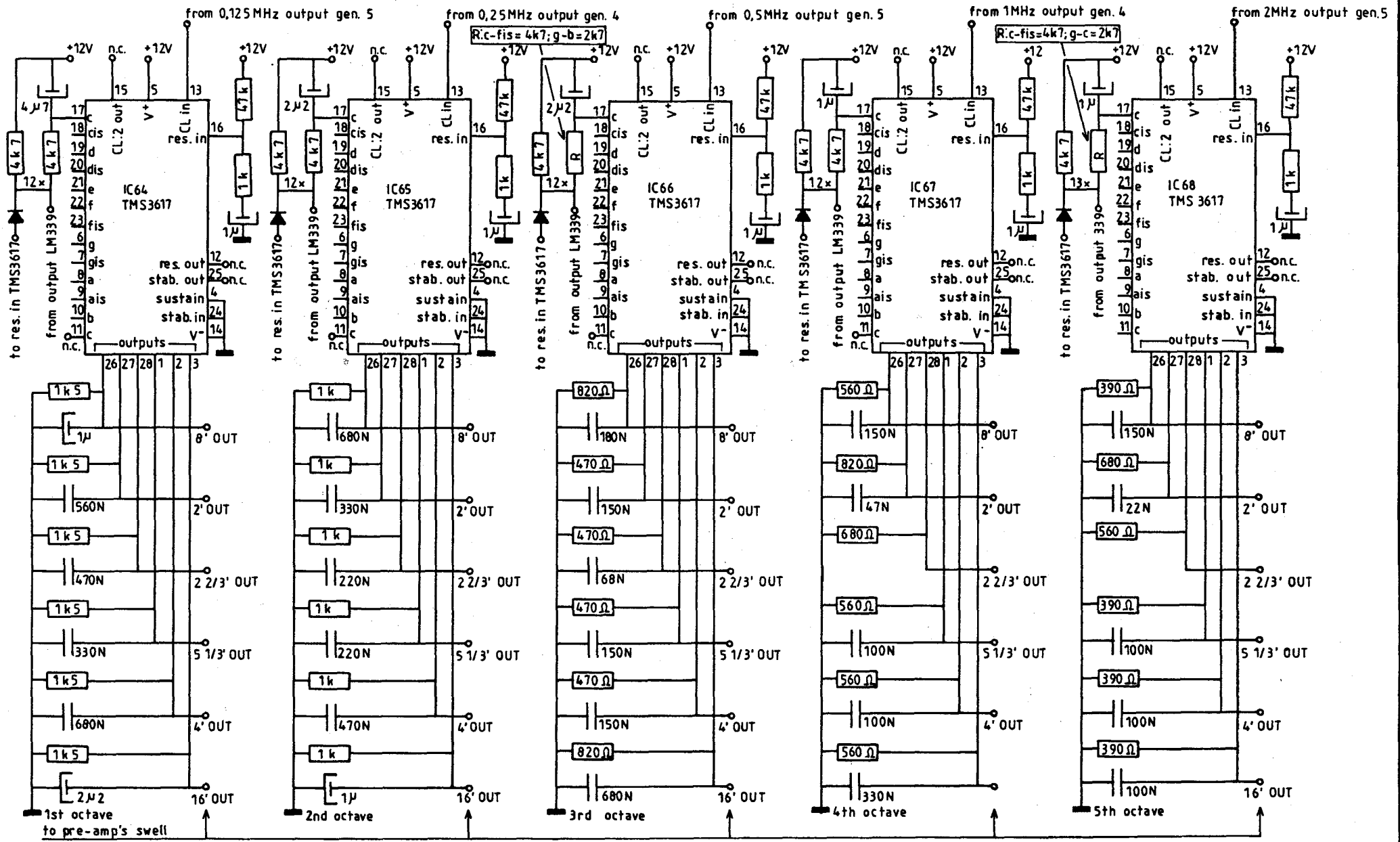
NOTE: the reset input (pin 16) of the IC's TMS3617 are connected with the corresponding pins of the TMS3617's of keying great



**KEYING & PRE-AMPS CHIFF GREAT**

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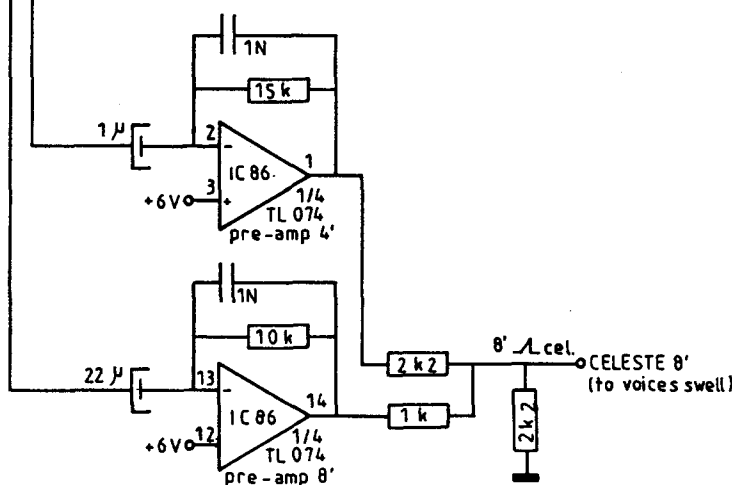
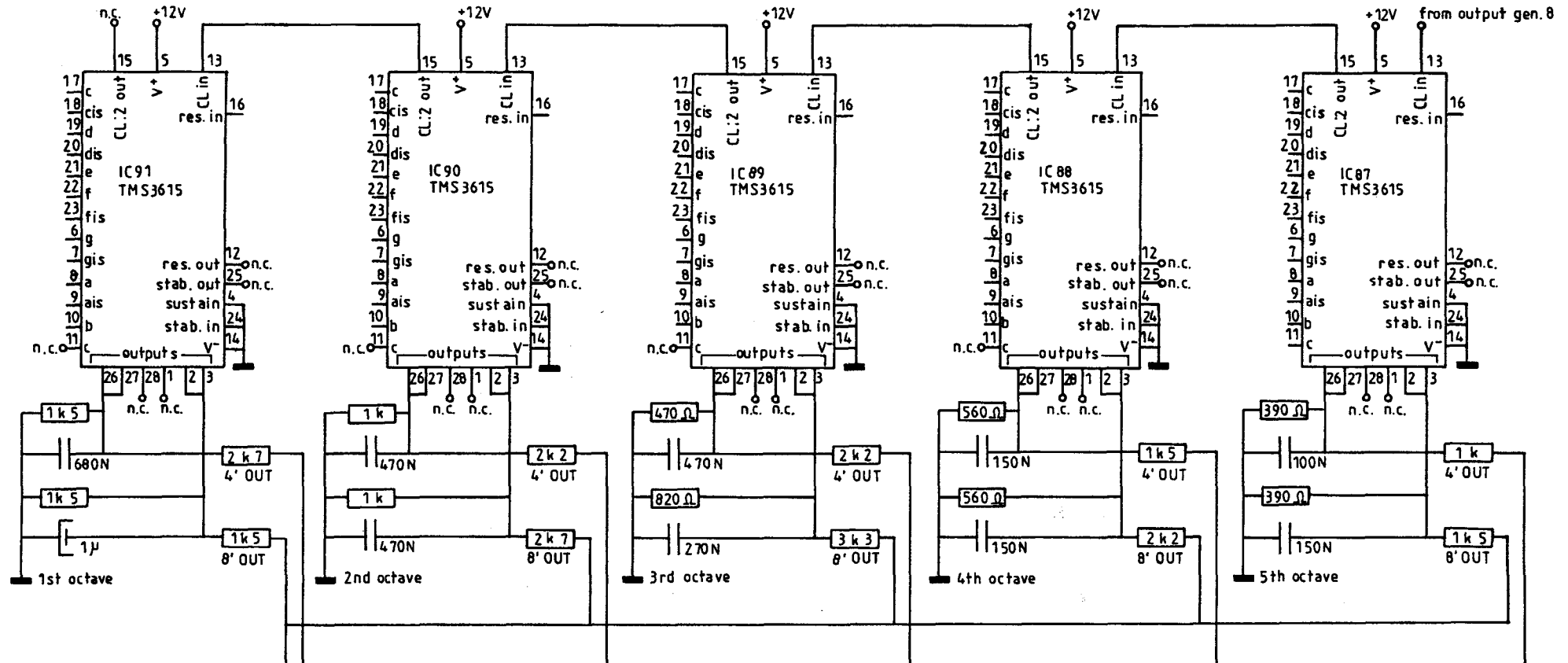
ALL DIODES 1N4148

KEYING SWELL		
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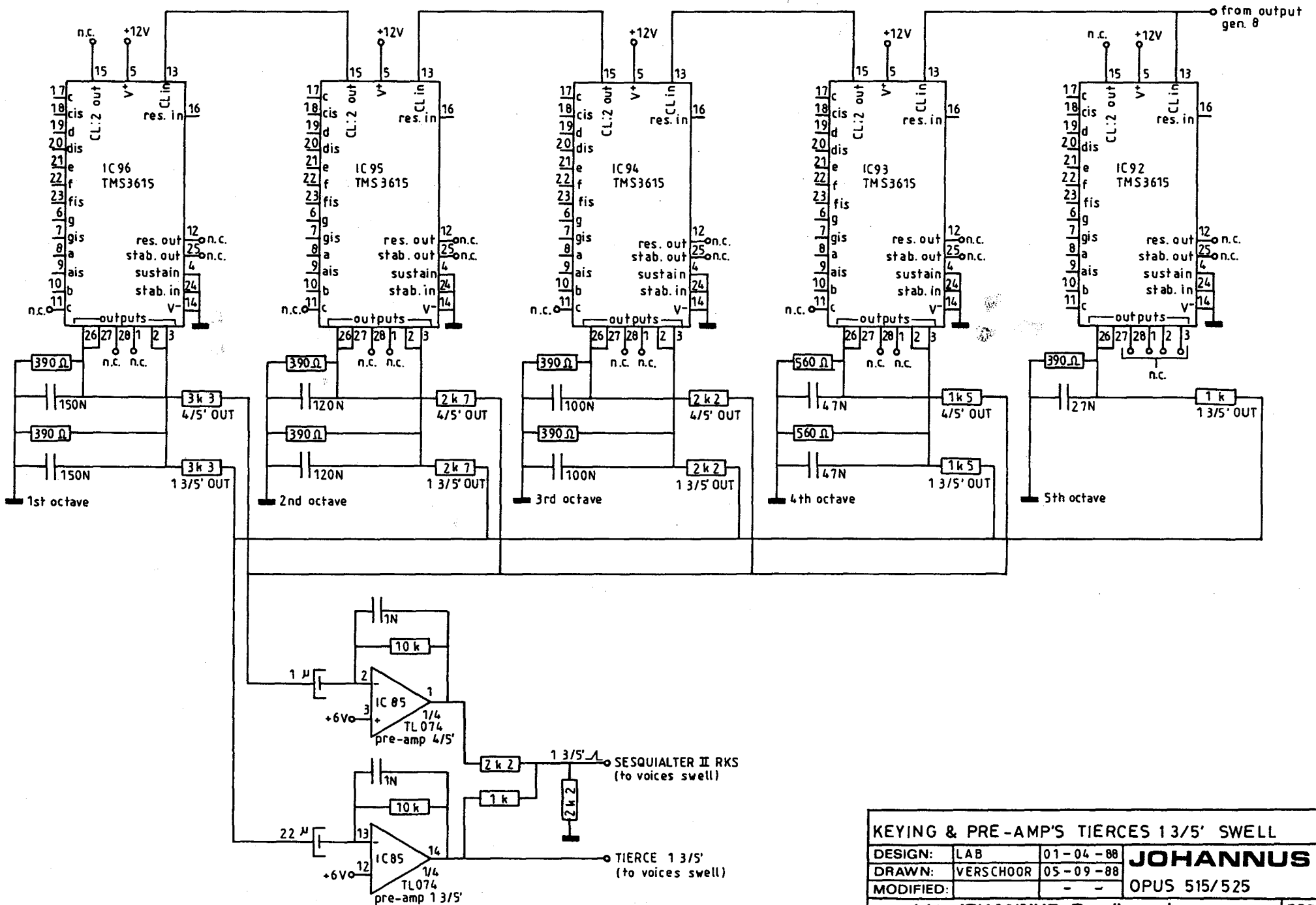
OPUS 515/525

NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the IC's TMS3615 are connected with the corresponding pins of the TMS3617's of keying swell

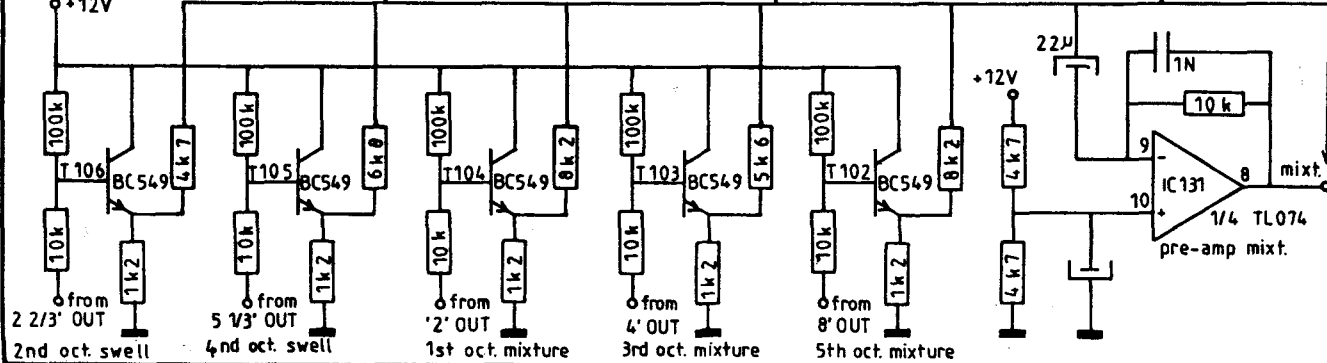
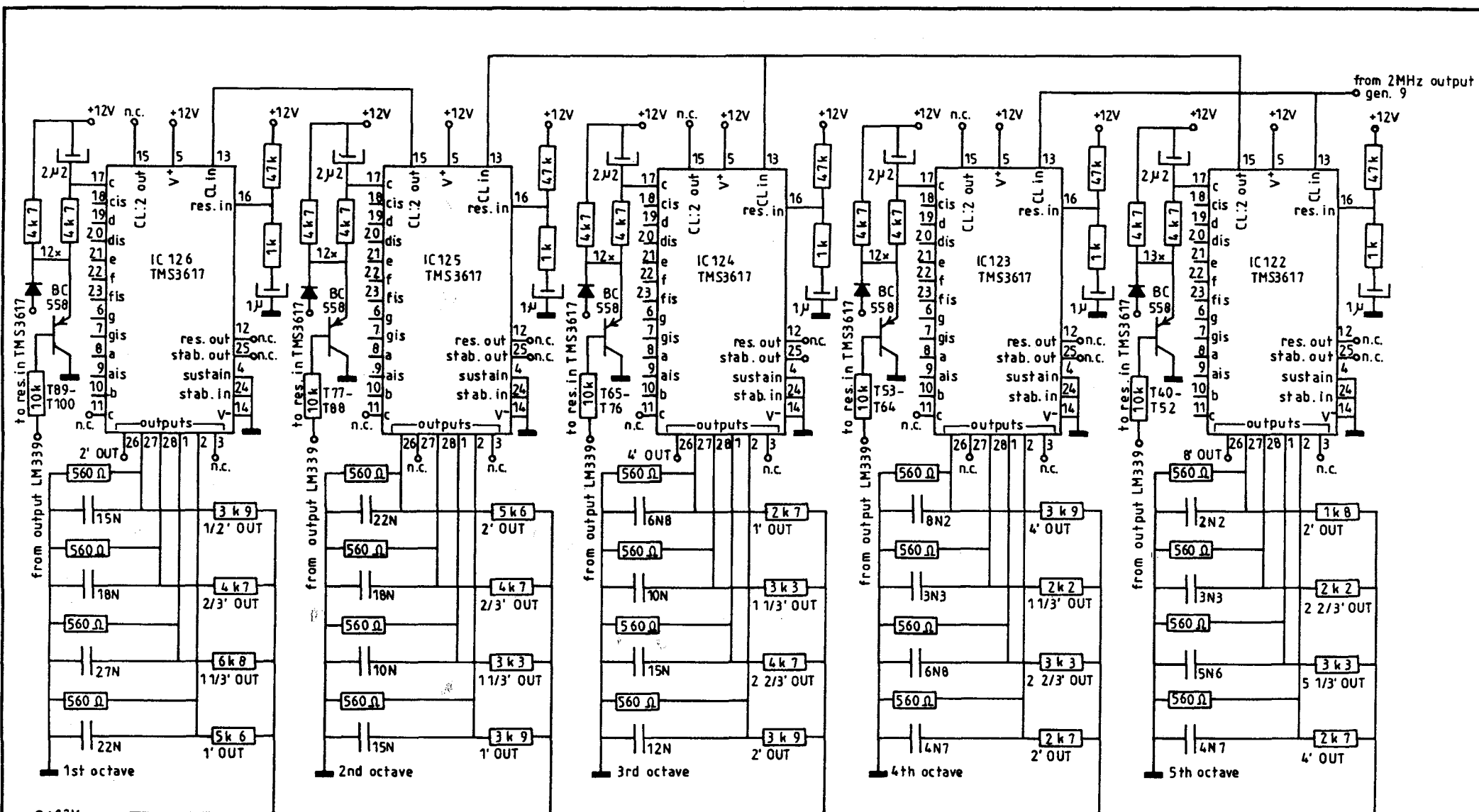


KEYING & PRE-AMP'S CELESTE 8' SWELL			
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NOTE: the K-inputs (pin 6-11 and pin 17-23) and the reset-input (pin 16) of the IC's TMS3615 are connected with the corresponding pins of the TMS3617's of keying swell



<b>KEYING &amp; PRE-AMP'S TIERCES 1 3/5' SWELL</b>			
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ALL DIODES 1N4148

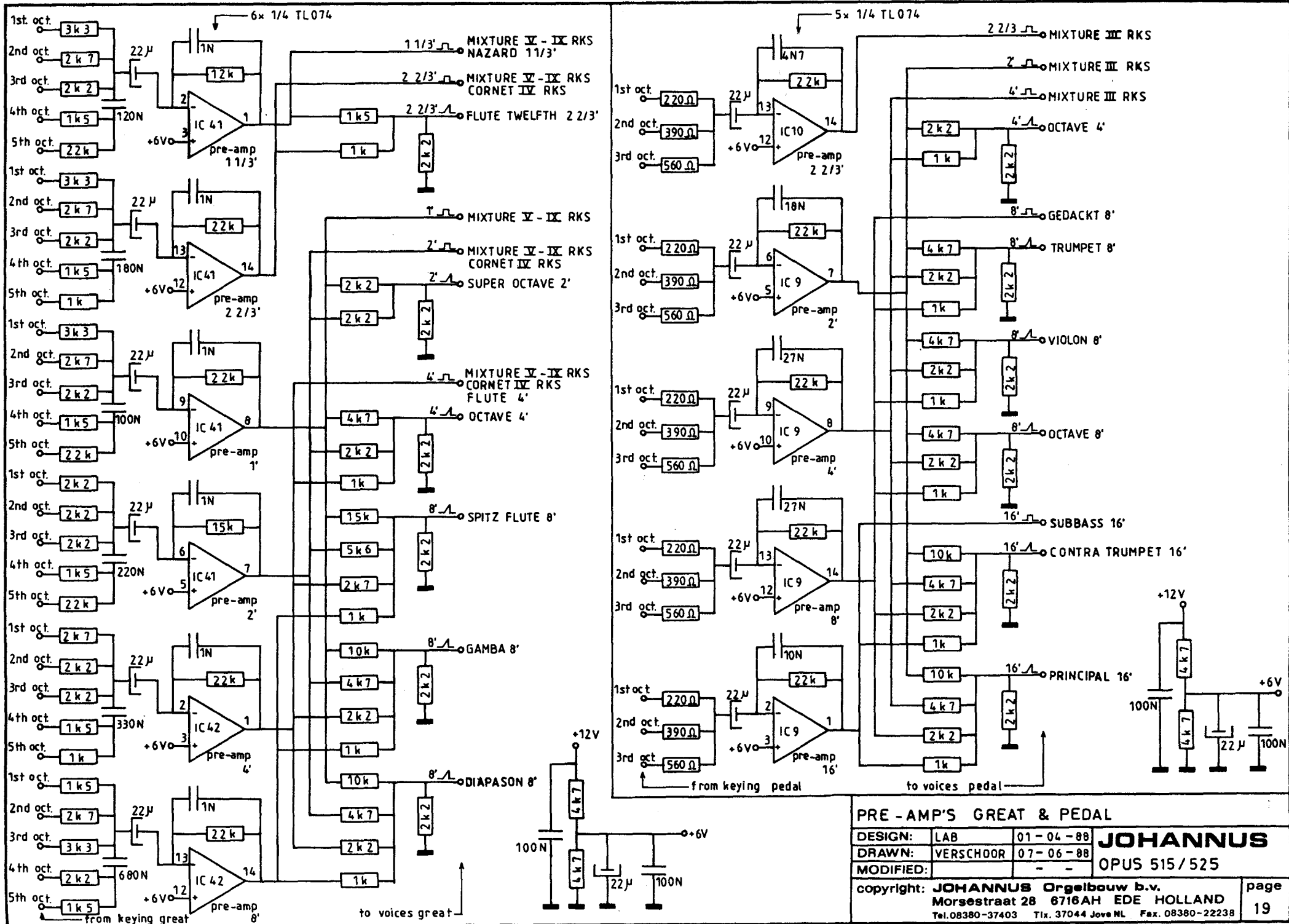
**KEYING, SOMMATOR & PRE-AMP MIXTURE & SWELL**

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OPUS 515/525

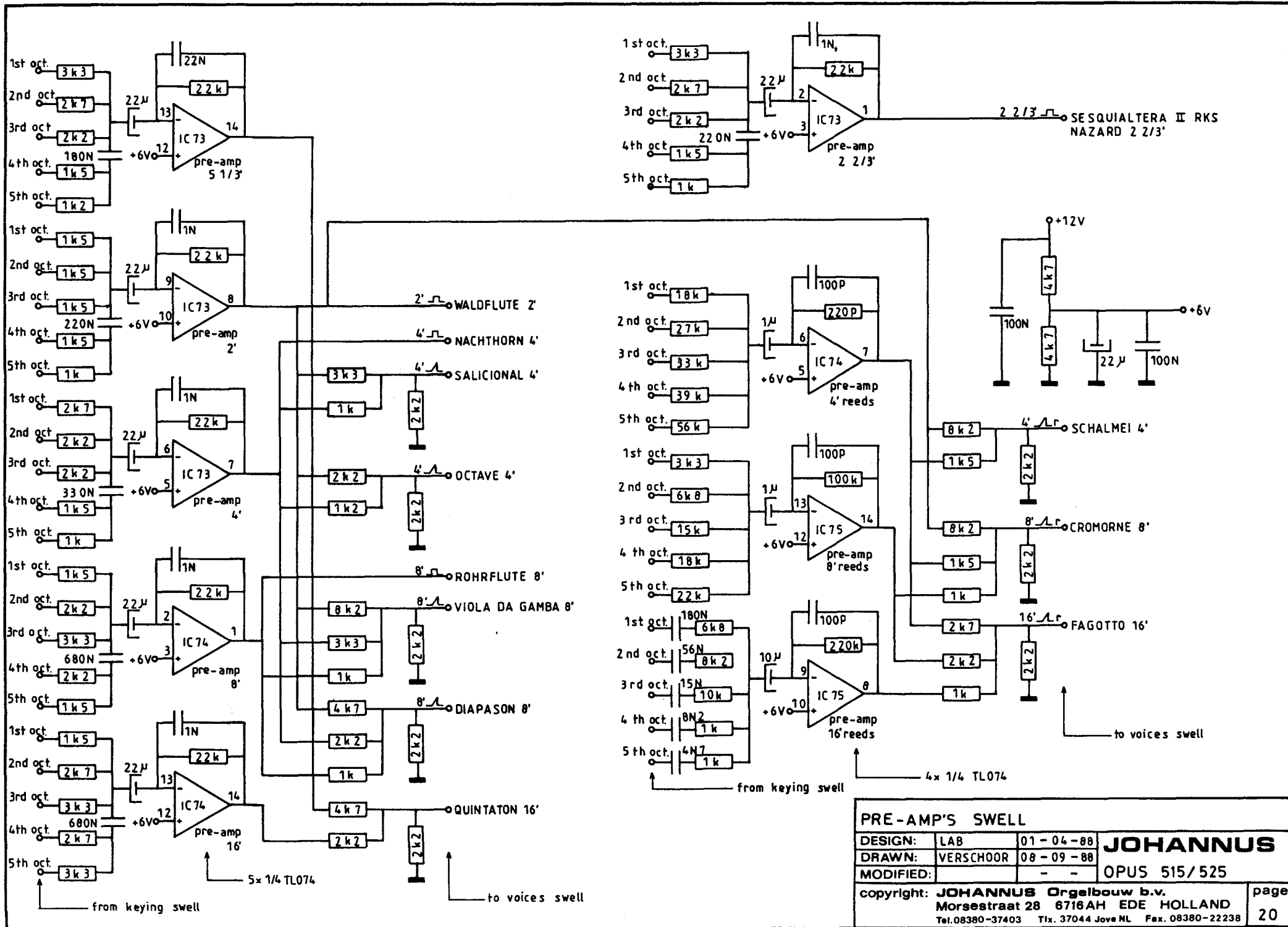
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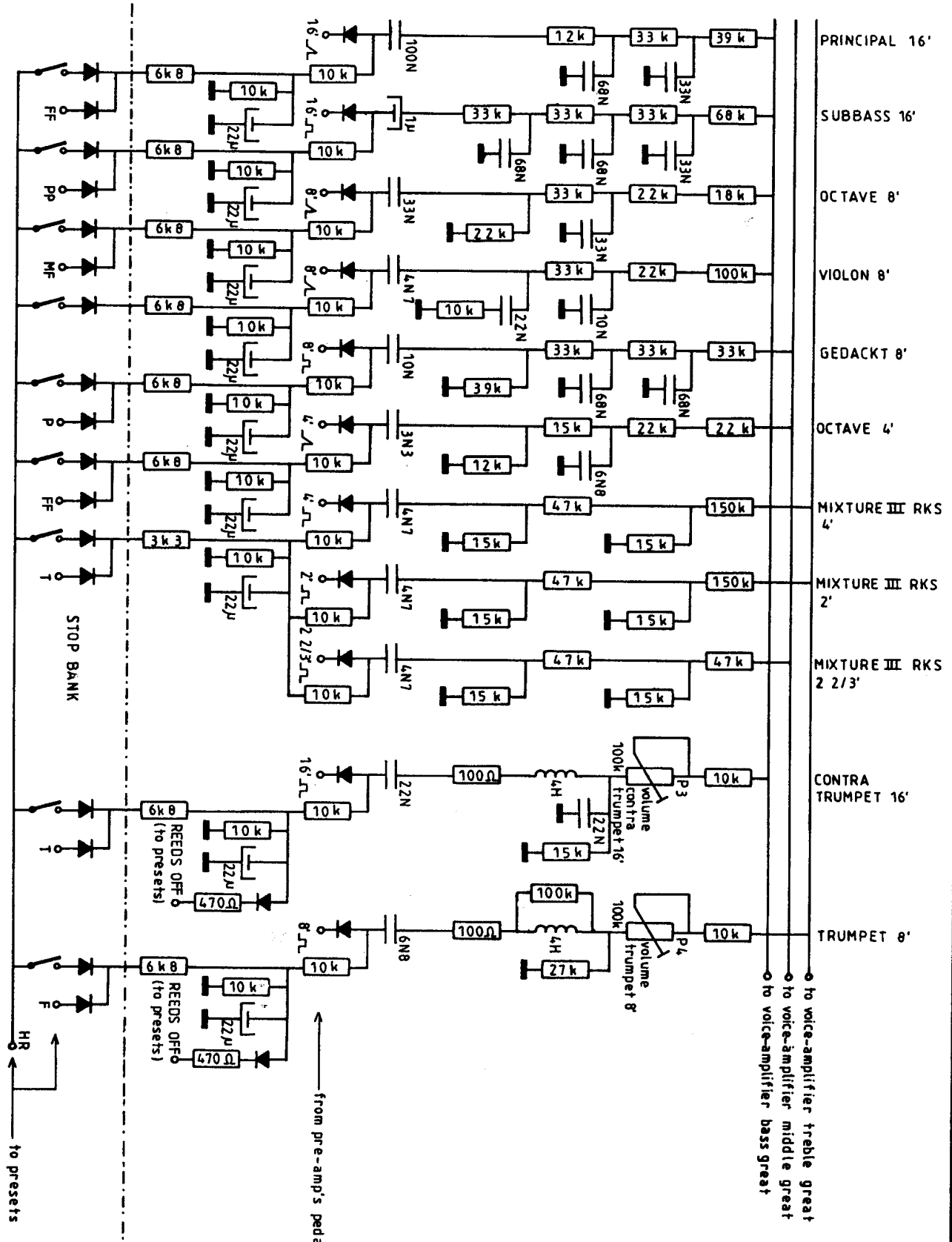


**PRE-AMP'S GREAT & PEDAL**

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<b>PRE-AMP'S SWELL</b>		
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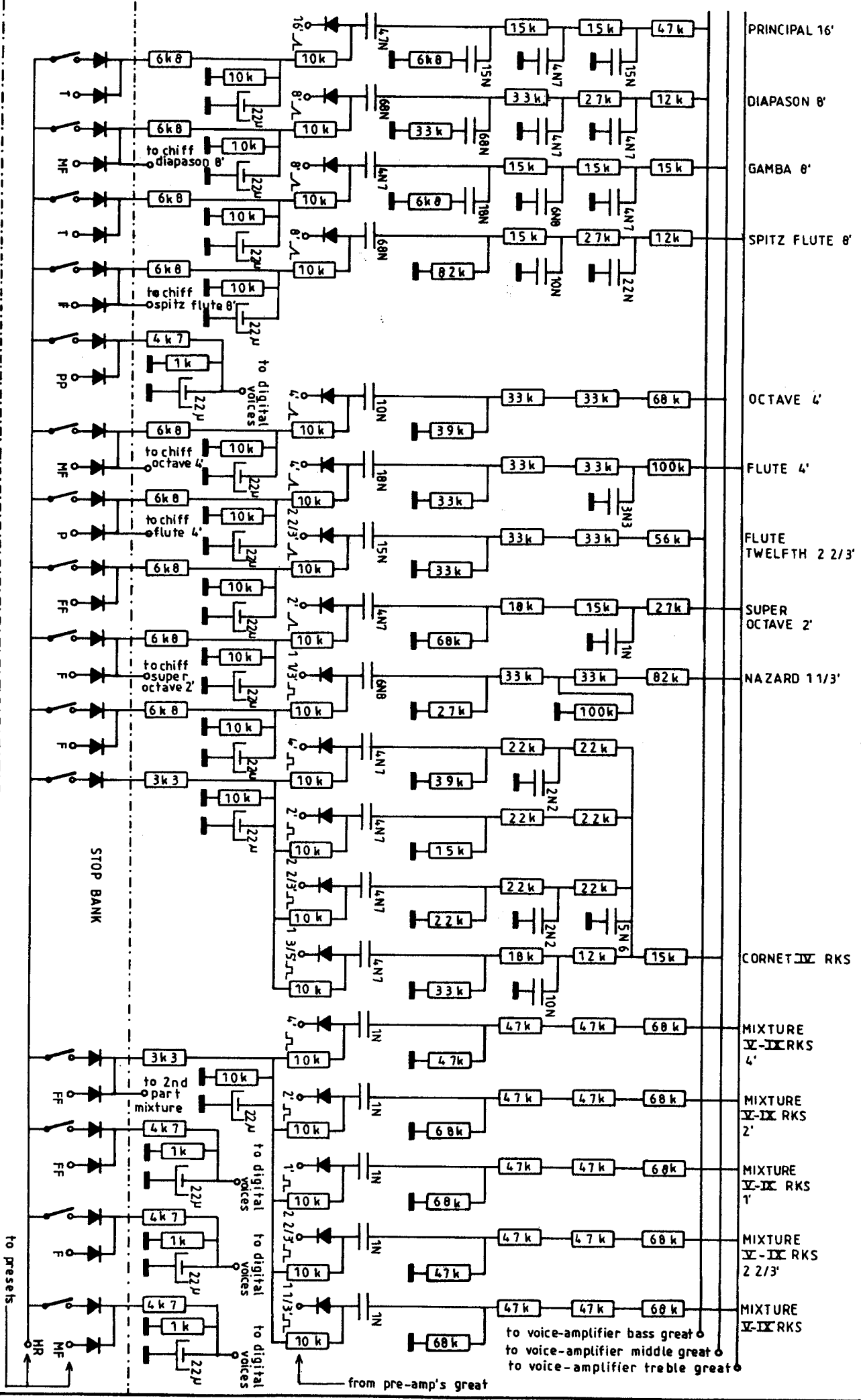
ALL DIODES 1N4148

VOICES PEDAL

**JOHANNUS**

OPUS 515/525

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ALL DIODES 1N4148

VOICES GREAT (1)

**JOHANNUS**

OPUS 515 / 525

DESIGN: LAB 01-04-88  
 DRAWN: VERSCH00R 09-09-88  
 MODIFIED: - - -

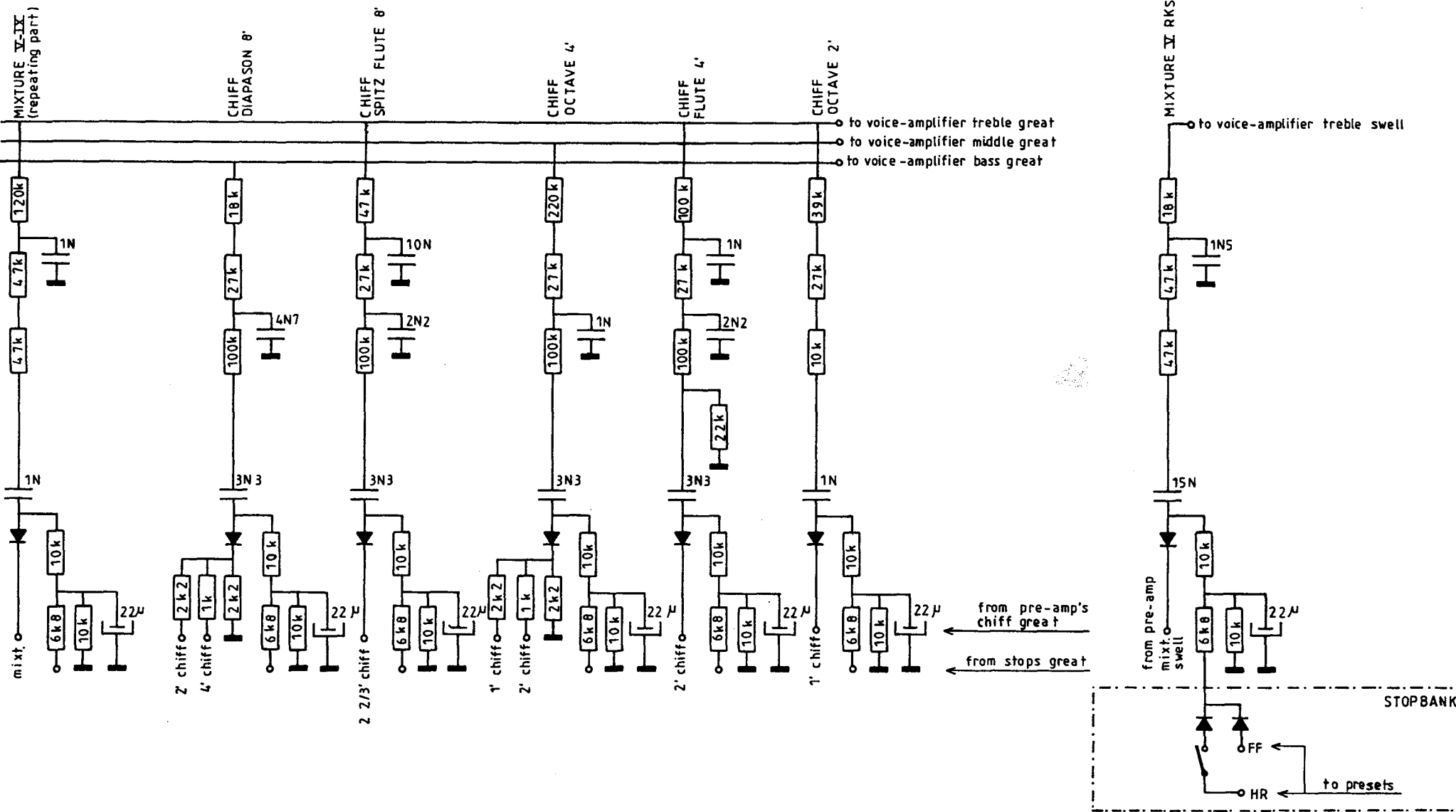
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Page 22

to voice-amplifier bass great  
 to voice-amplifier middle great  
 to voice-amplifier treble great

from pre-amp's great



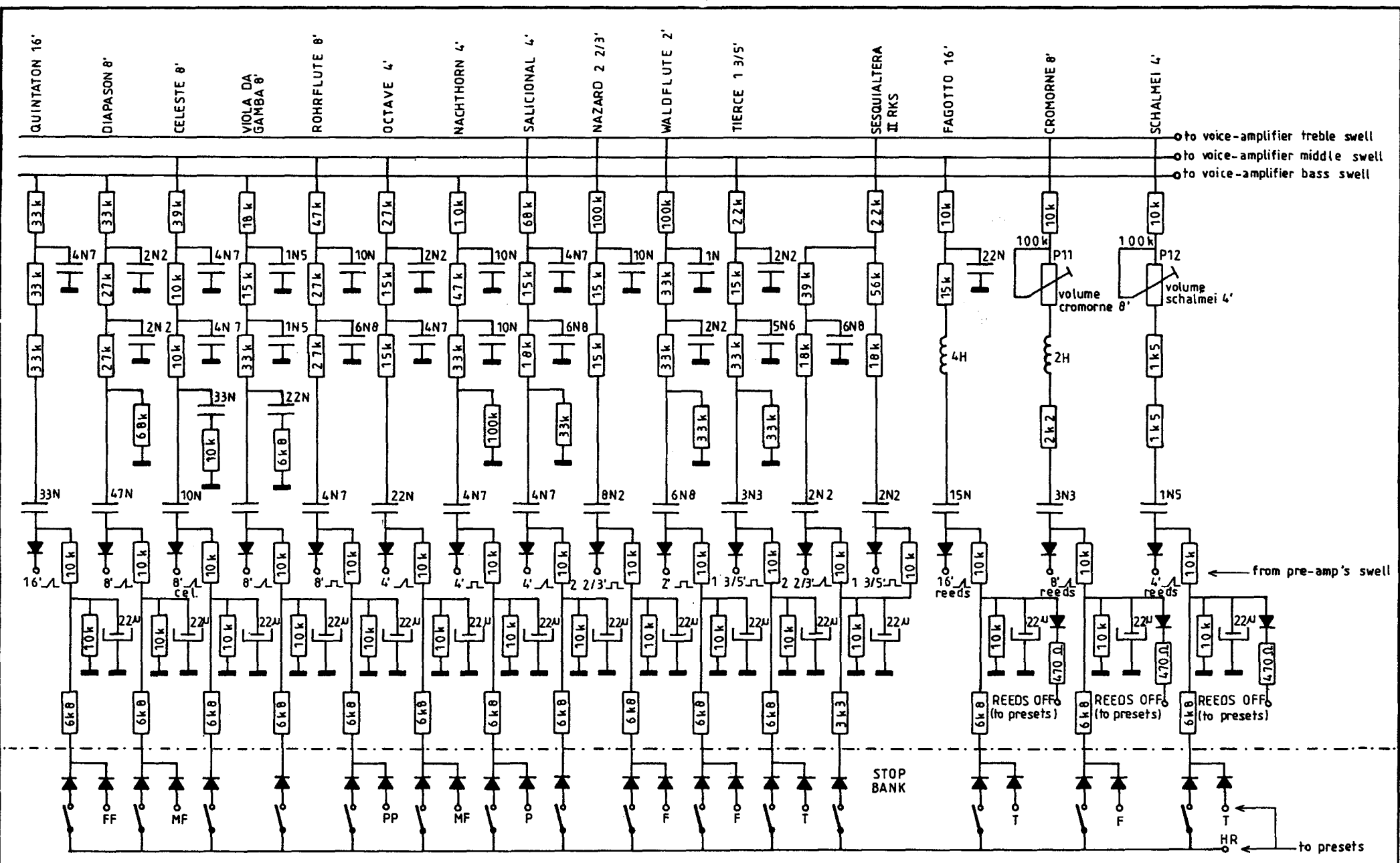


ALL DIODES 1N4148

VOICES GREAT (II) & VOICES SWELL (I)		
DESIGN:	LAB	01-04-88
DRAWN:	VERSCHOOR	12-09-88
MODIFIED:	-	-
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**JOHANNUS**

OPUS 515/525



ALL DIODES 1N4148

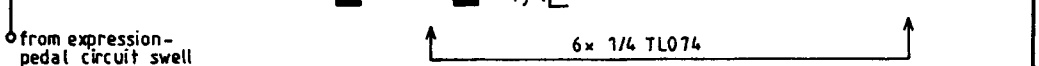
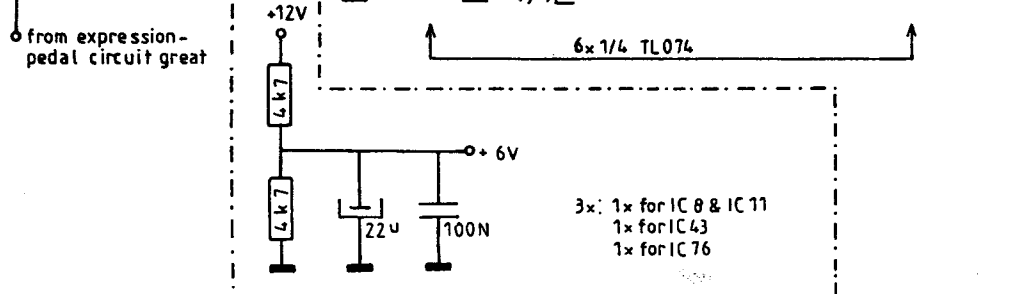
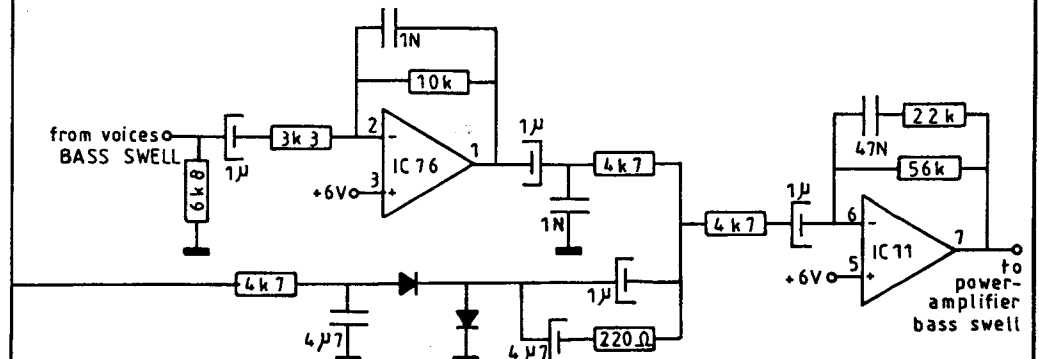
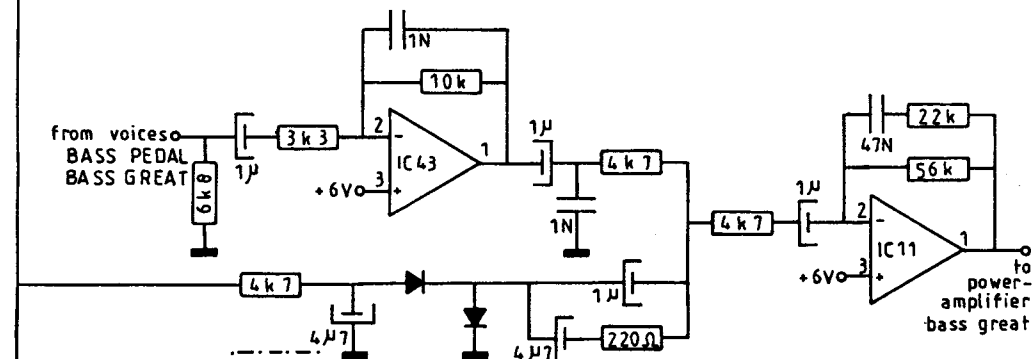
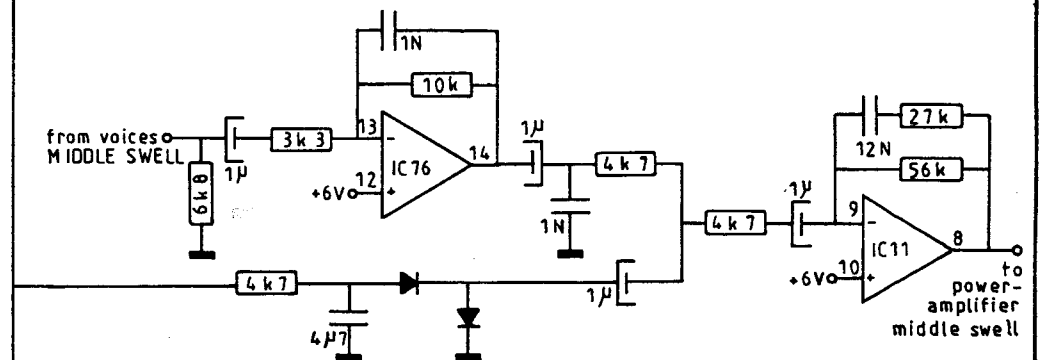
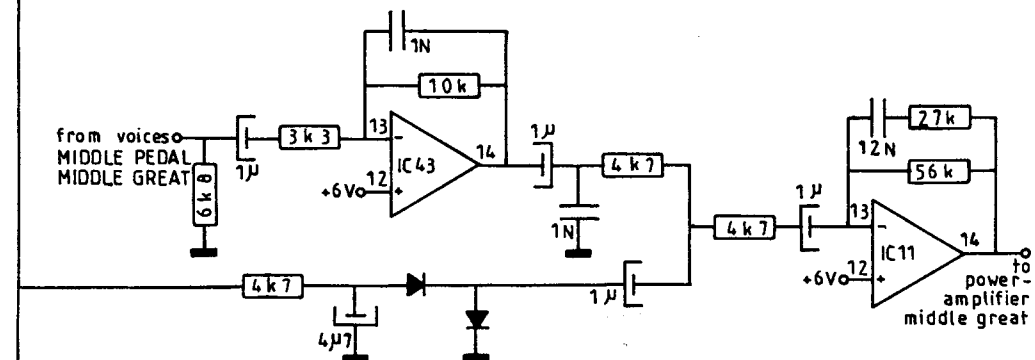
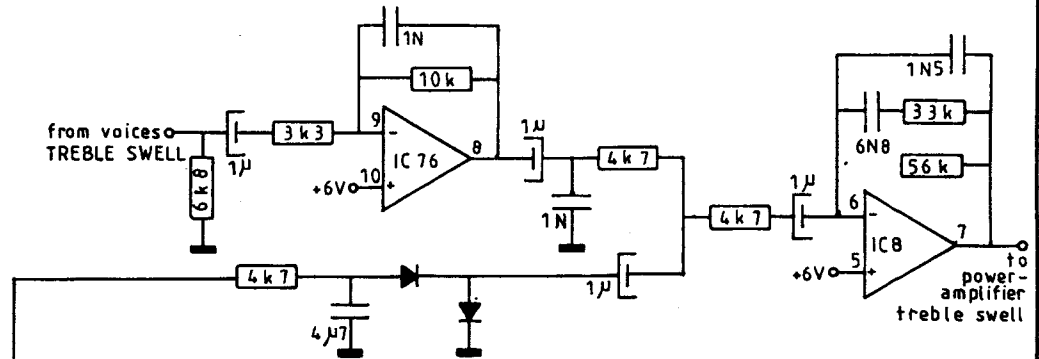
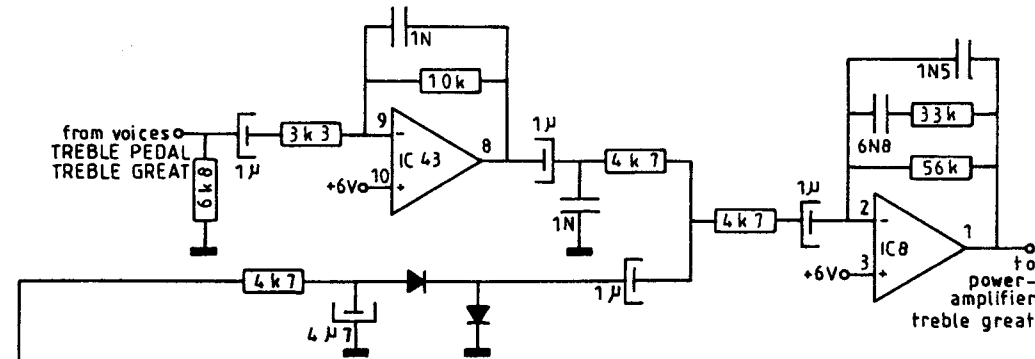
**VOICES SWELL (II)**

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DRAWN:	VERSCHOOR	12-09-88	
MODIFIED:	-	-	

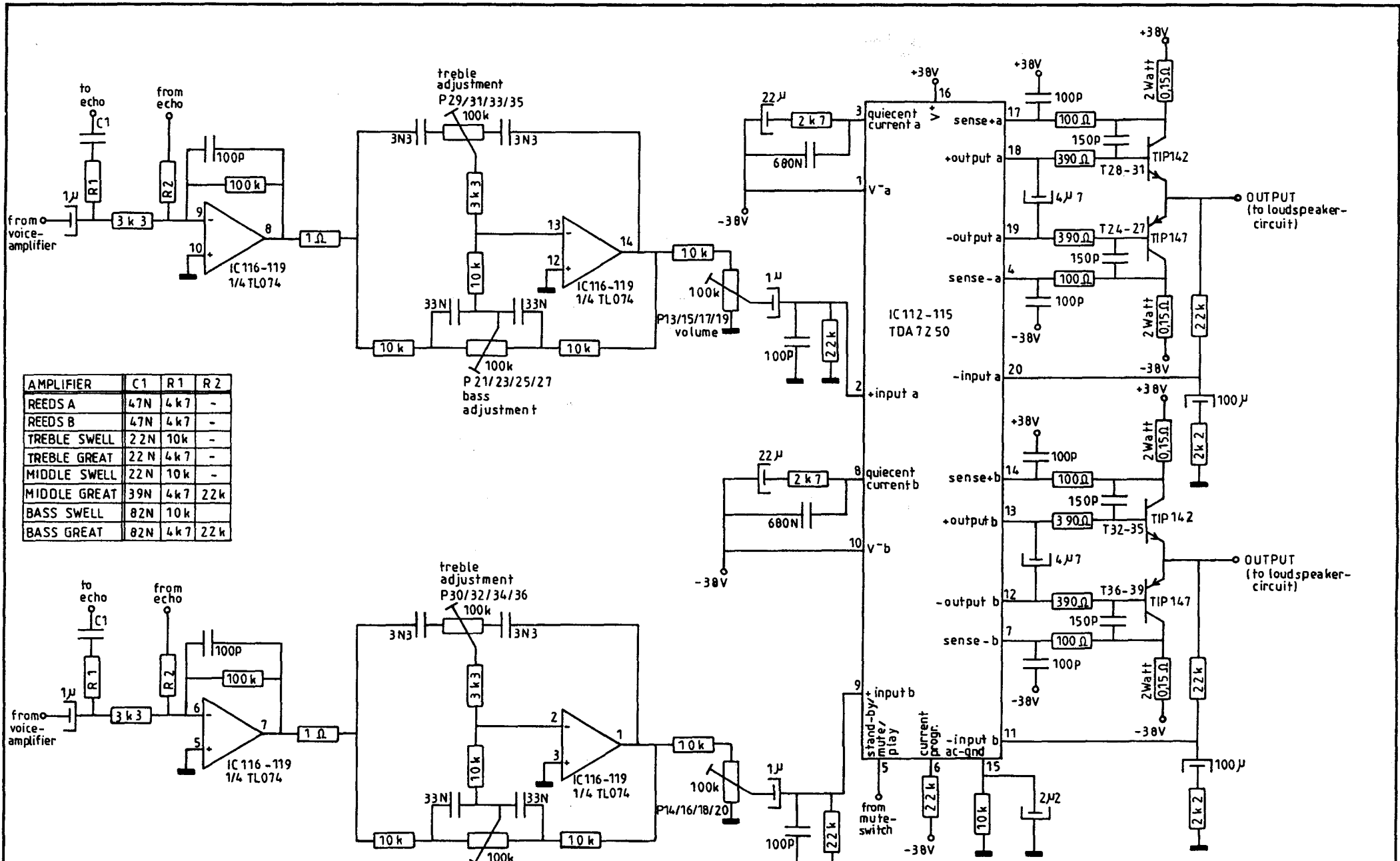
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OPUS 515/525

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VOICE AMPLIFIERS		
DESIGN:	LAB	01-04-88
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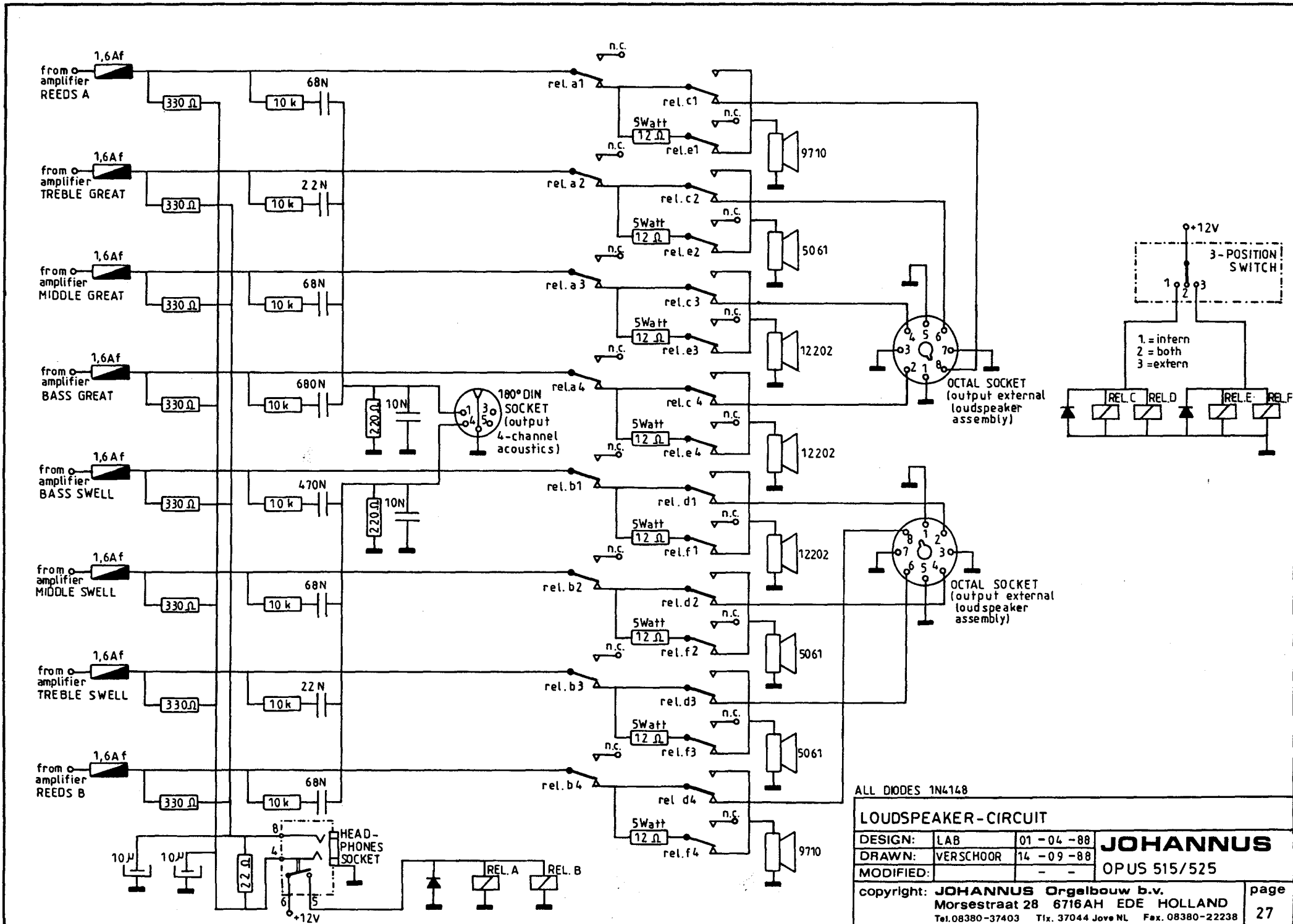


AMPLIFIER	C1	R1	R2
REEDS A	47N	4k7	-
REEDS B	47N	4k7	-
TREBLE SWELL	22N	10k	-
TREBLE GREAT	22N	4k7	-
MIDDLE SWELL	22N	10k	-
MIDDLE GREAT	39N	4k7	22k
BASS SWELL	82N	10k	
BASS GREAT	82N	4k7	22k

**POWER AMPLIFIERS WITH TONE CONTROLS**

DESIGN:	LAB	01 - 04 - 88	<b>JOHANNUS</b> OPUS 515/525
DRAWN:	VERSCHOOR	13 - 09 - 88	
MODIFIED:	-	-	

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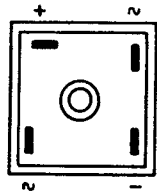
ALL DIODES 1N4148

**LOUDSPEAKER-CIRCUIT**

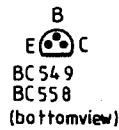
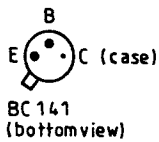
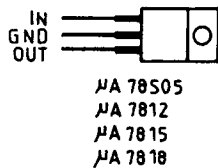
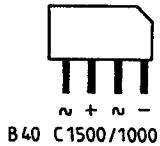
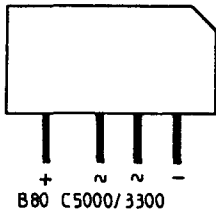
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DRAWN:	VERSCHOOR	14-09-88
MODIFIED:	-	-

**JOHANNUS**  
OPUS 515/525

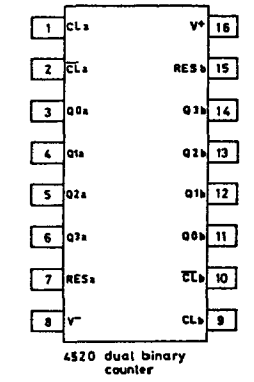
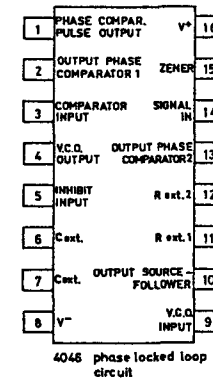
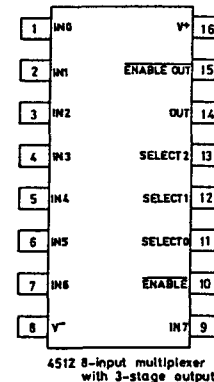
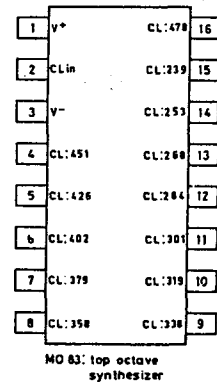
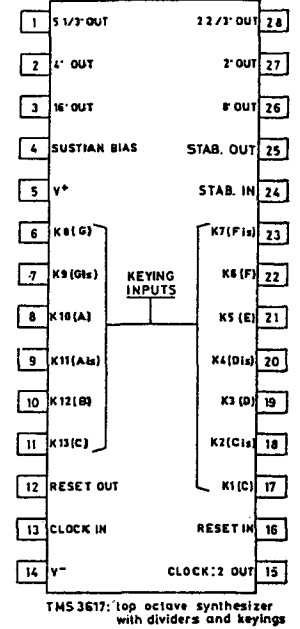
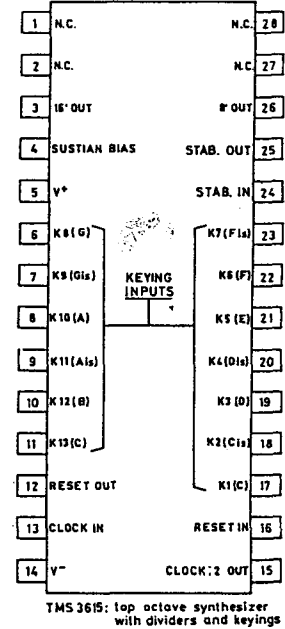
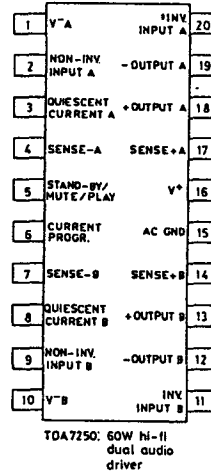
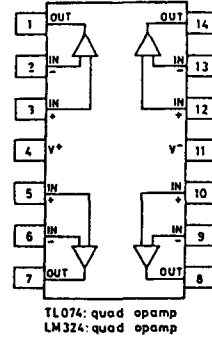
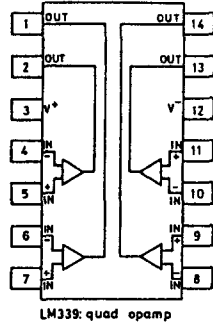
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KBPC 125/110-010



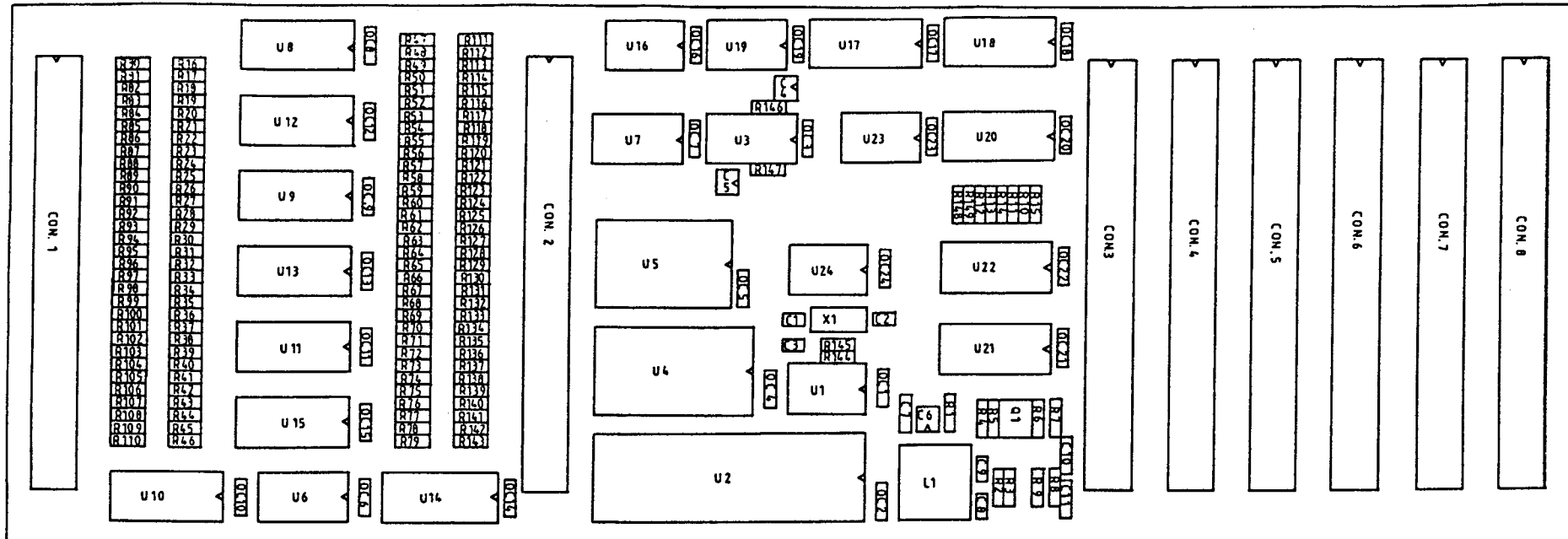
TIP 142  
TIP 147



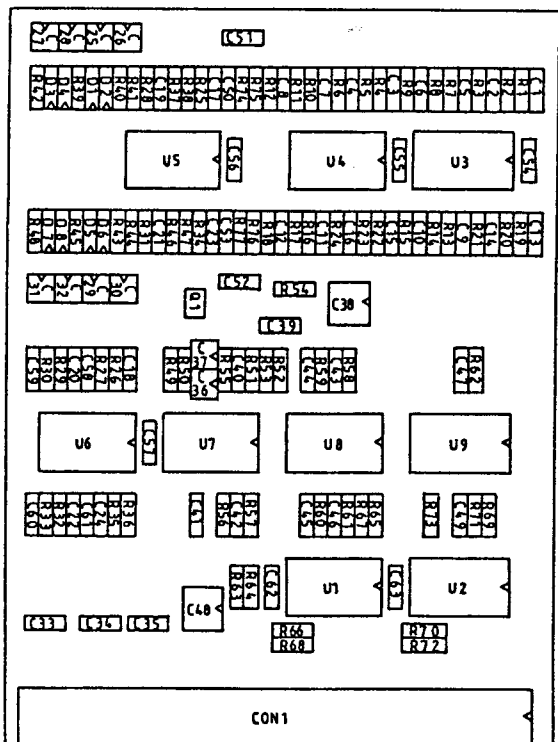
GENERAL INFORMATION SEMI-CONDUCTORS

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DRAWN:	VERSCHOOR 14-09-88	
MODIFIED:	- -	OPUS 515/525
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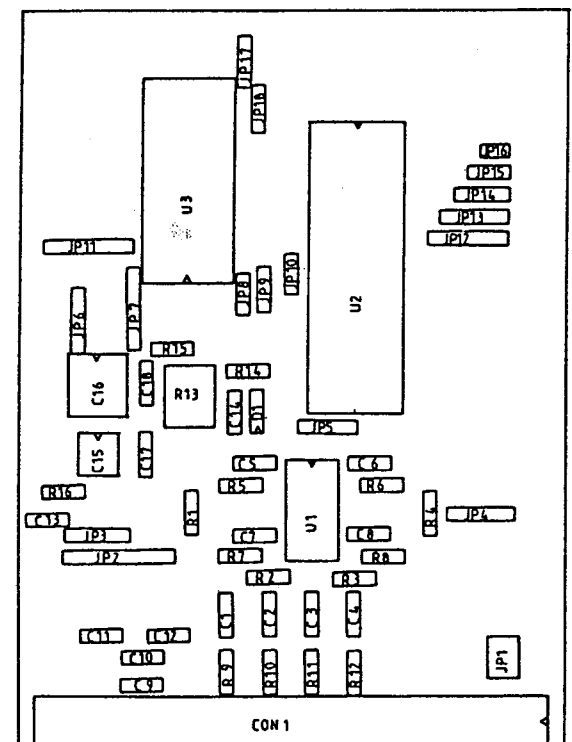
APPENDIX I  
DIGITAL VOICES



MOTHERBOARD



PRE-AMPLIFIERS / NOISE-GENERATOR



ONE DIGITAL VOICE

**POSITION DIAGRAM**

DESIGN:	LAB	21 - 03 - 88	<b>JOHANNUS</b> DIGITAL VOICES
DRAWN:	VERSCHOOR	23 - 08 - 88	
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page  
I-1



## CONNECTOR 2

31	K31
○	K30
29	K29
○	K28
27	K27
○	K26
25	K25
○	K24
23	K23
○	K22
21	K21
○	K20
19	K19
○	K18
17	K17
○	K16
15	K15
○	K14
13	K13
○	K12
11	K11
○	K10
9	K9
○	K8
7	K7
○	K6
5	K5
○	K4
3	K3
○	K2
1	K1

## CONNECTOR 1

31	+5V
○	K61
29	K60
○	K59
27	K58
○	K57
25	K56
○	K55
23	K54
○	K53
21	K52
○	K51
19	K50
○	K49
17	K48
○	K47
15	K46
○	K45
13	K44
○	K43
11	K42
○	K41
9	K40
○	K39
7	K38
○	K37
5	K36
○	K35
3	K34
○	K33
1	K32

## CONNECTOR 3

31	CH
○	TREM
29	B8
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	EXPR
○	AMP0
21	AMP1
○	AMP2
19	AMP3
○	
17	
○	ST0
15	ST1
○	ST2
13	ST3
○	ST4
11	ST5
○	ST6
9	ST7
○	TR0
7	TR1
○	TR2
5	TR3
○	TR4
3	TR5
○	TR6
1	TR7

## CONNECTOR 4

31	
○	
29	
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	EXPR
○	
21	OUT0
○	OUT1
19	OUT2
○	OUT3
17	OUT4
○	OUT5
15	OUT6
○	OUT7
13	AMP0
○	AMP1
11	AMP2
○	AMP3
9	
○	N0
7	N1
○	N2
5	N3
○	N4
3	N5
○	N6
1	N7

## CONNECTOR 5

31	B8
○	RES
29	GEN
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	
○	
21	OUT0
○	OUT1
19	OUT2
○	OUT3
17	OUT4
○	OUT5
15	OUT6
○	OUT7
13	
○	
11	
○	
9	
○	B0
7	B1
○	B2
5	B3
○	B4
3	B5
○	SEL0
1	SEL1

## CONNECTOR 6

31	B8
○	RES
29	GEN
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	
○	
21	OUT0
○	OUT1
19	OUT2
○	OUT3
17	OUT4
○	OUT5
15	OUT6
○	OUT7
13	
○	
11	
○	
9	
○	B0
7	B1
○	B2
5	B3
○	B4
3	B5
○	SEL2
1	SEL3

## CONNECTOR 7

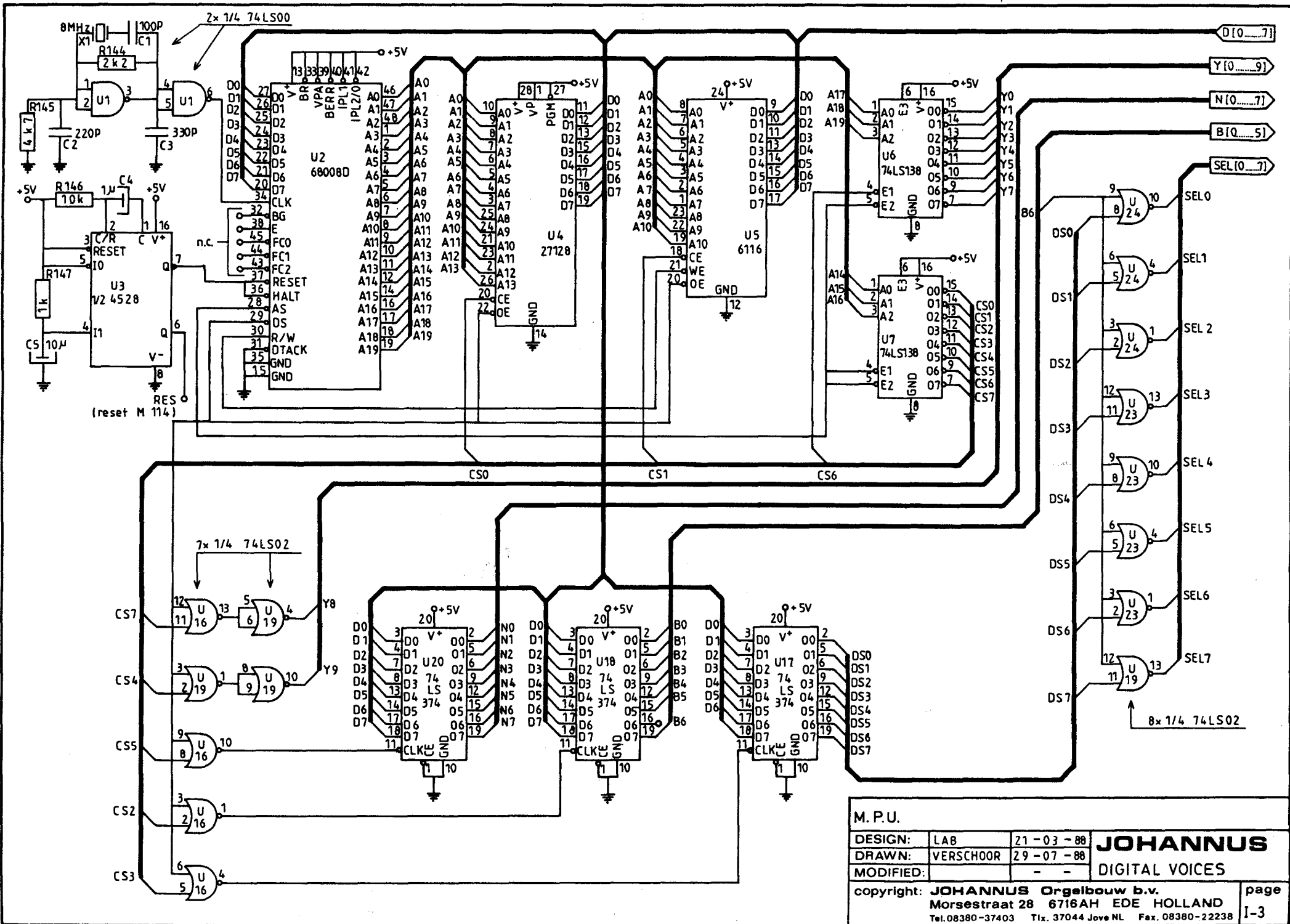
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○	RES
29	GEN
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	
○	
21	OUT0
○	OUT1
19	OUT2
○	OUT3
17	OUT4
○	OUT5
15	OUT6
○	OUT7
13	
○	
11	
○	
9	
○	B0
7	B1
○	B2
5	B3
○	B4
3	B5
○	SEL4
1	SEL5

## CONNECTOR 8

31	B8
○	RES
29	GEN
○	+12V
27	AGND
○	-12V
25	+5V
○	LGND
23	
○	
21	OUT0
○	OUT1
19	OUT2
○	OUT3
17	OUT4
○	OUT5
15	OUT6
○	OUT7
13	
○	
11	
○	
9	
○	B0
7	B1
○	B2
5	B3
○	B4
3	B5
○	SEL6
1	SEL7

## CONNECTOR PINNING MOTHERBOARD

DESIGN:	LAB	21-03-88	<b>JOHANNUS</b> DIGITAL VOICES
DRAWN:	VERSCHOOR	19-07-88	
MODIFIED:	-	-	
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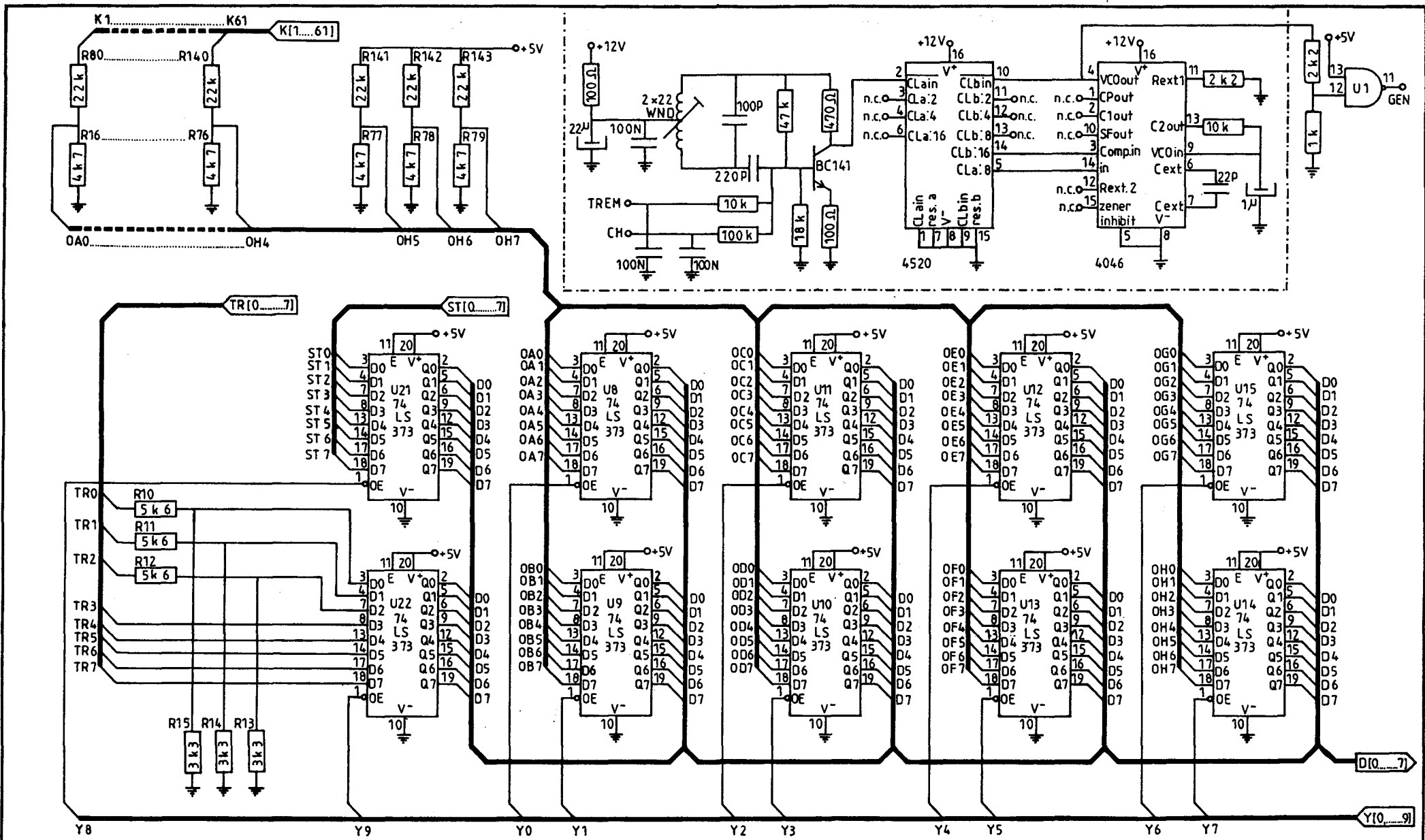


M. P. U.

DESIGN:	LAB	21-03-88	<b>JOHANNUS</b> DIGITAL VOICES
DRAWN:	VERSCHOOR	29-07-88	
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page I-3



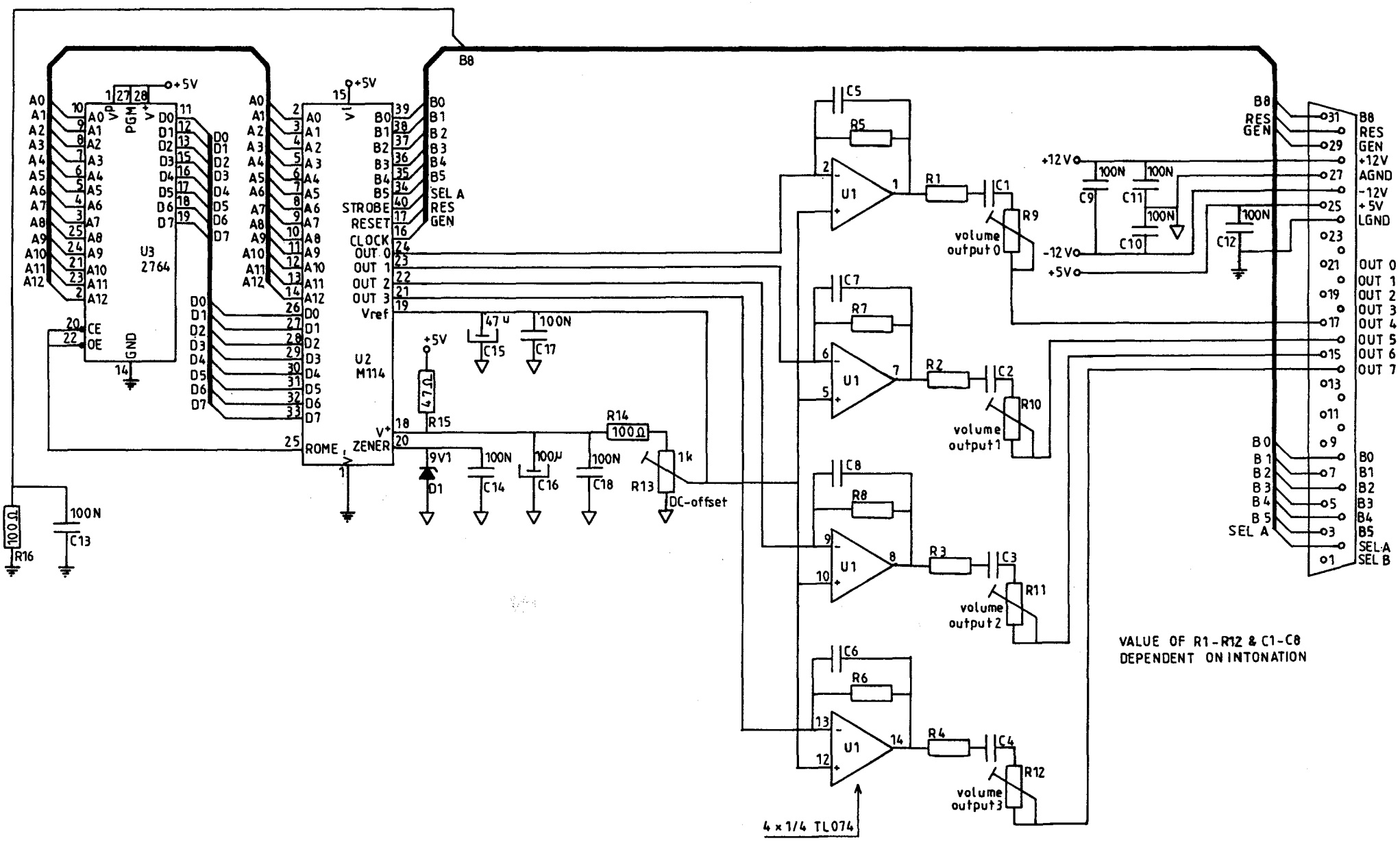
KEYING/STOPS/TRANSPOSER - INTERFACE &  
 GENERATOR

DESIGN:	LAB	21-03-88	<b>JOHANNUS</b>
DRAWN:	VERSCHOOR	25-07-88	
MODIFIED:	VERSCHOOR	13-03-89	

DIGITAL VOICES

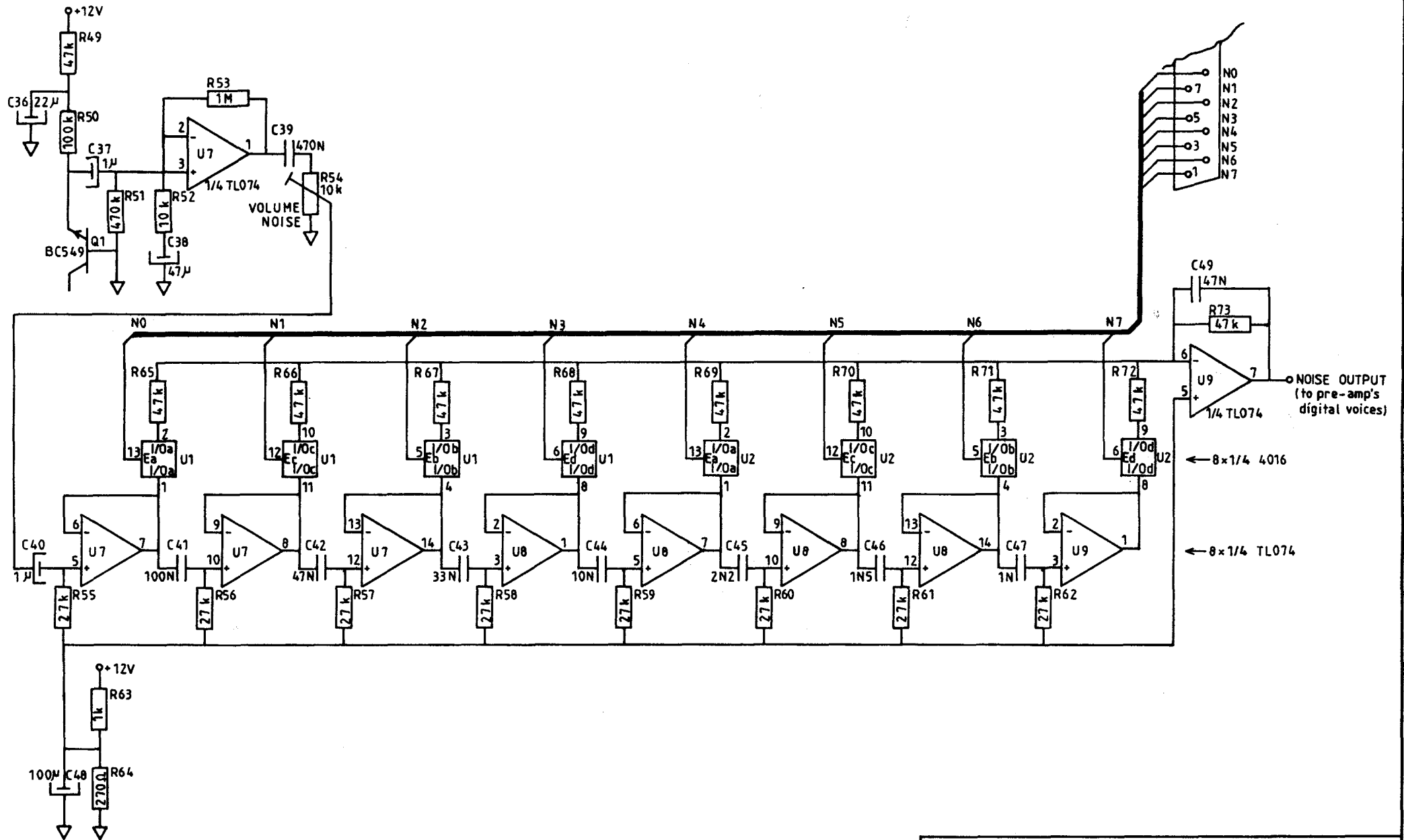
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 1-4

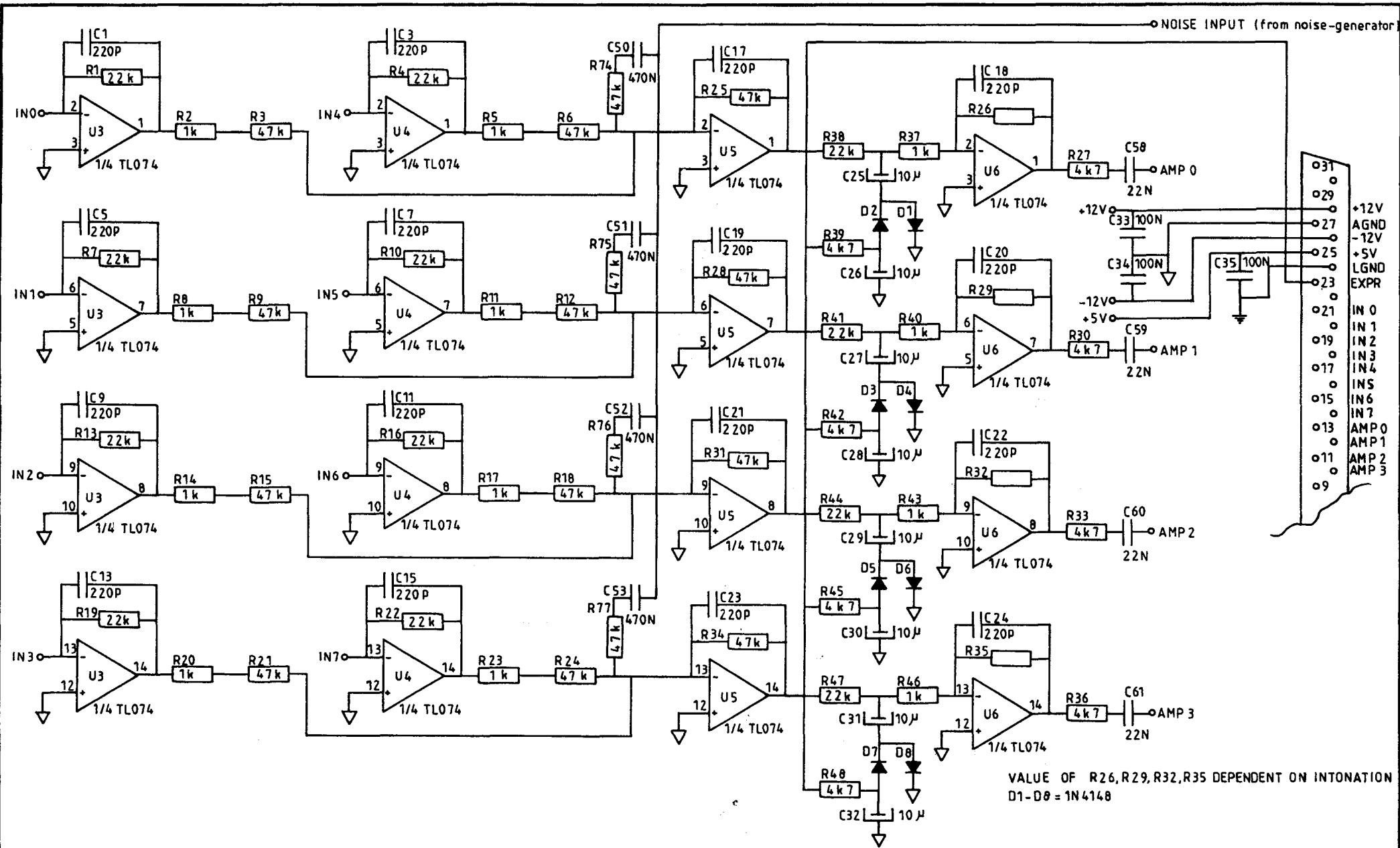


VALUE OF R1-R12 & C1-C8  
DEPENDENT ON INTONATION

DIGITAL VOICE (1x)			<b>JOHANNUS</b> DIGITAL VOICES
DESIGN:	LAB	22 -03 -88	
DRAWN:	VERSCHOOR	08 -07 -88	
MODIFIED:	-	-	
copyright: JOHANNUS Orgelbouw b.v. Morsestraat 28 6716AH EDE HOLLAND Tel.08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			page I-5



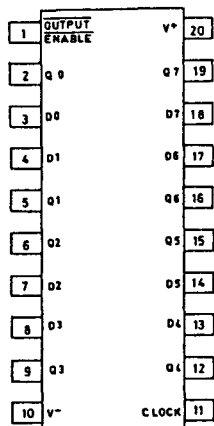
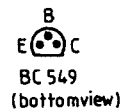
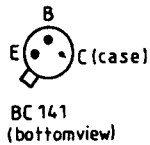
NOISE GENERATOR			
DESIGN:	LAB	22-03-88	<b>JOHANNUS</b> DIGITAL VOICES
DRAWN:	VERSCHOOR	18-07-88	
MODIFIED:		- -	
copyright: <b>JOHANNUS Orgelbouw b.v.</b> Morsestraat 28 8716AH EDE HOLLAND Tel. 08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			page 1-6



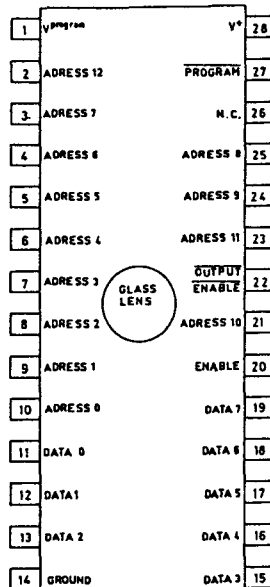
PRE-AMPLIFIERS		
DESIGN:	LAB	22-03-88
DRAWN:	VERSCHOOR	15-07-88
MODIFIED:	-	-
copyright: JOHANNUS Orgelbouw b.v. Morsestraat 28 6716AH EDE HOLLAND Tel.08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238		page 1-7

**JOHANNUS**

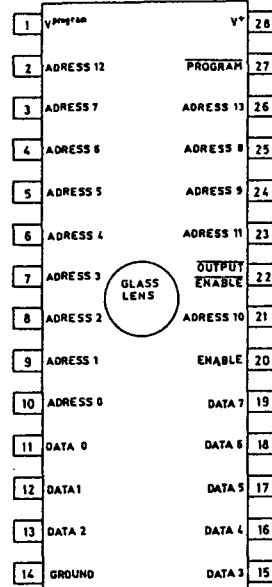
DIGITAL VOICES



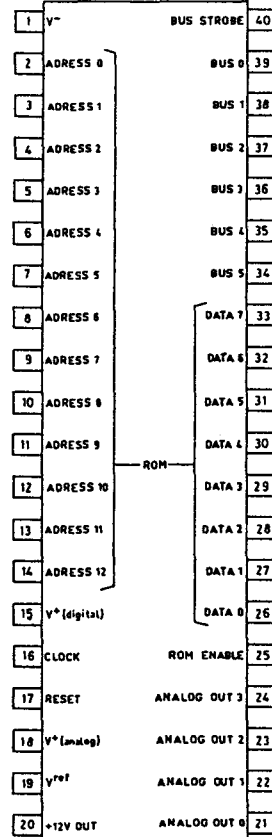
74374: octal D-flip-flop with 3-state outputs



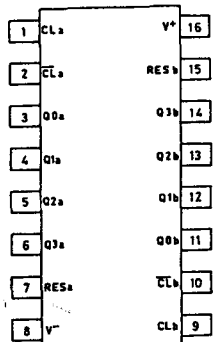
2764: 64k ultraviolet erasable programmable read only memory



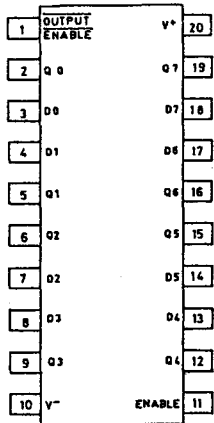
27128: 128k ultraviolet erasable programmable read only memory



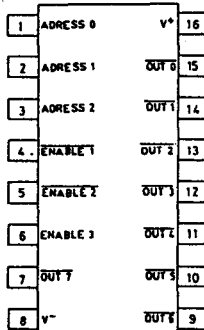
M1145 digital sound generator



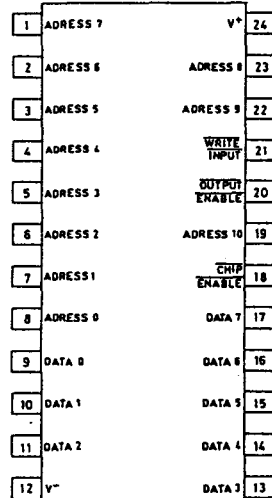
4520 dual binary counter



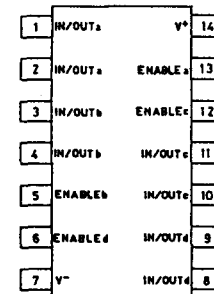
74373: octal transparent latch with 3-state outputs



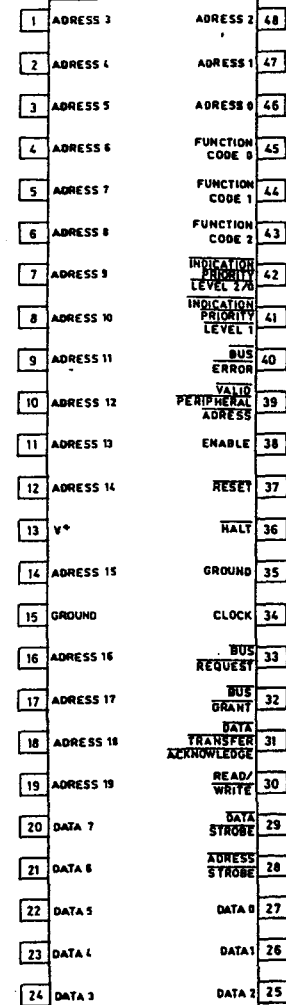
74138: 1-of-8 decoder/demultiplexer



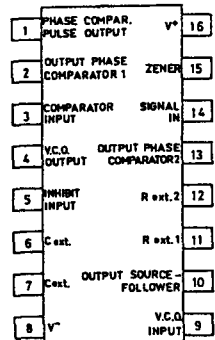
6116: 16k non-volatile random access memory



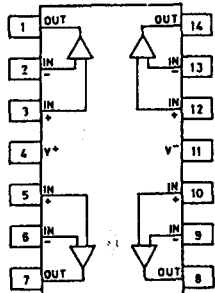
4016: quad bilateral switches



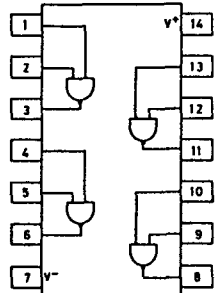
68008: 8-/32-bit micro-processor with 8-bit data bus



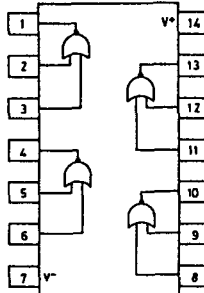
4046 phase locked loop circuit



TL074: quad opamp  
LM324: quad opamp



7400: quad nand



7402: quad nor

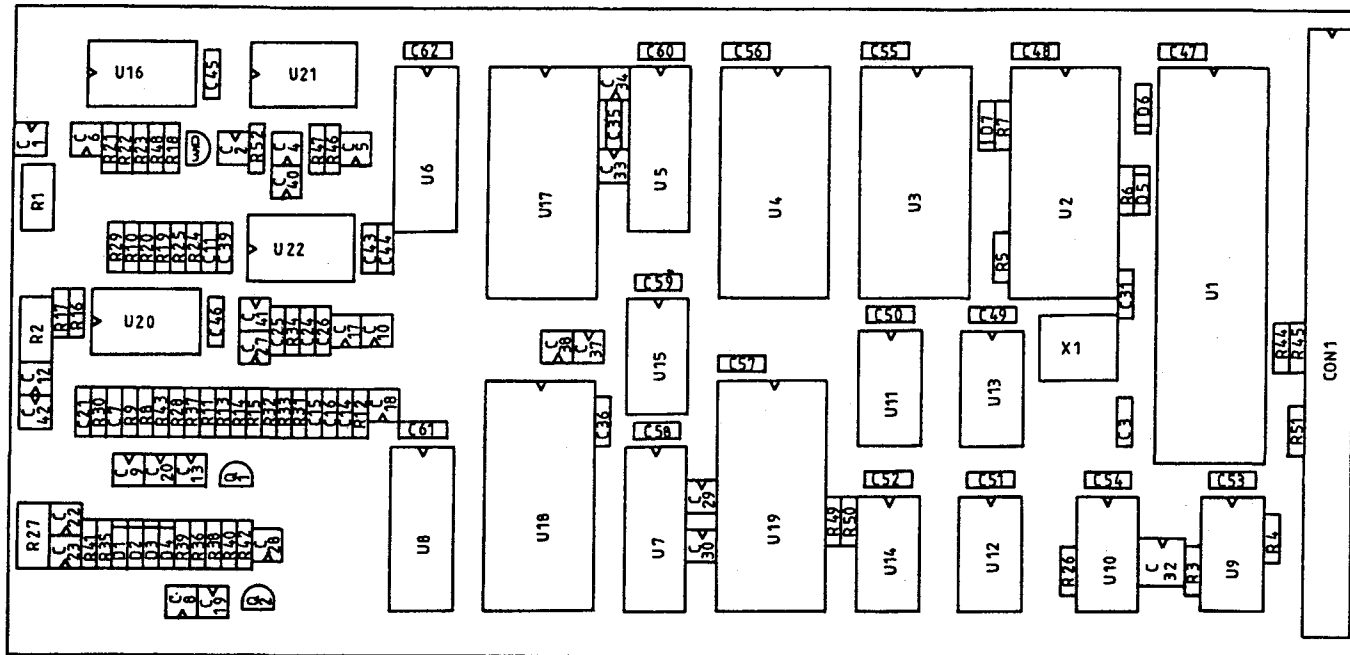
GENERAL INFORMATION SEMI-CONDUCTORS

DESIGN:	- -	<b>JOHANNUS</b> DIGITAL VOICES
DRAWN:	VERSCHOOR 14-09-88	
MODIFIED:	VERSCHOOR 13-03-89	

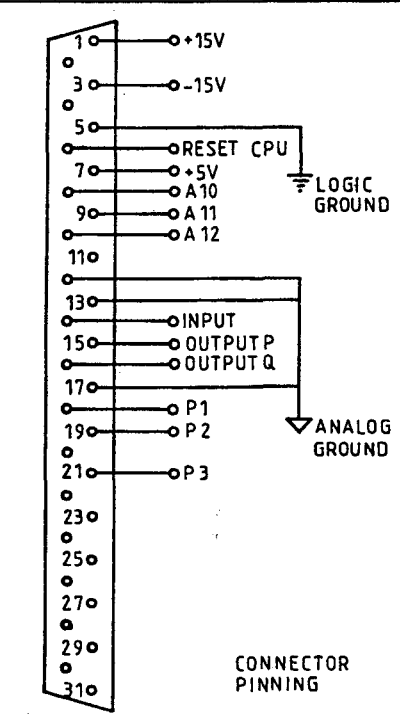
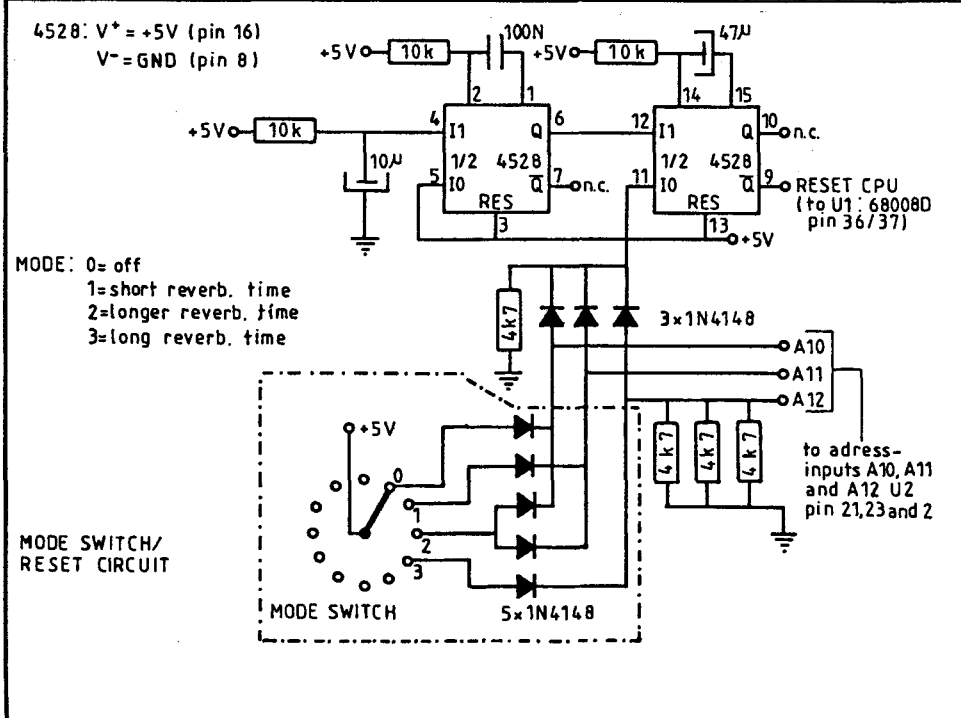
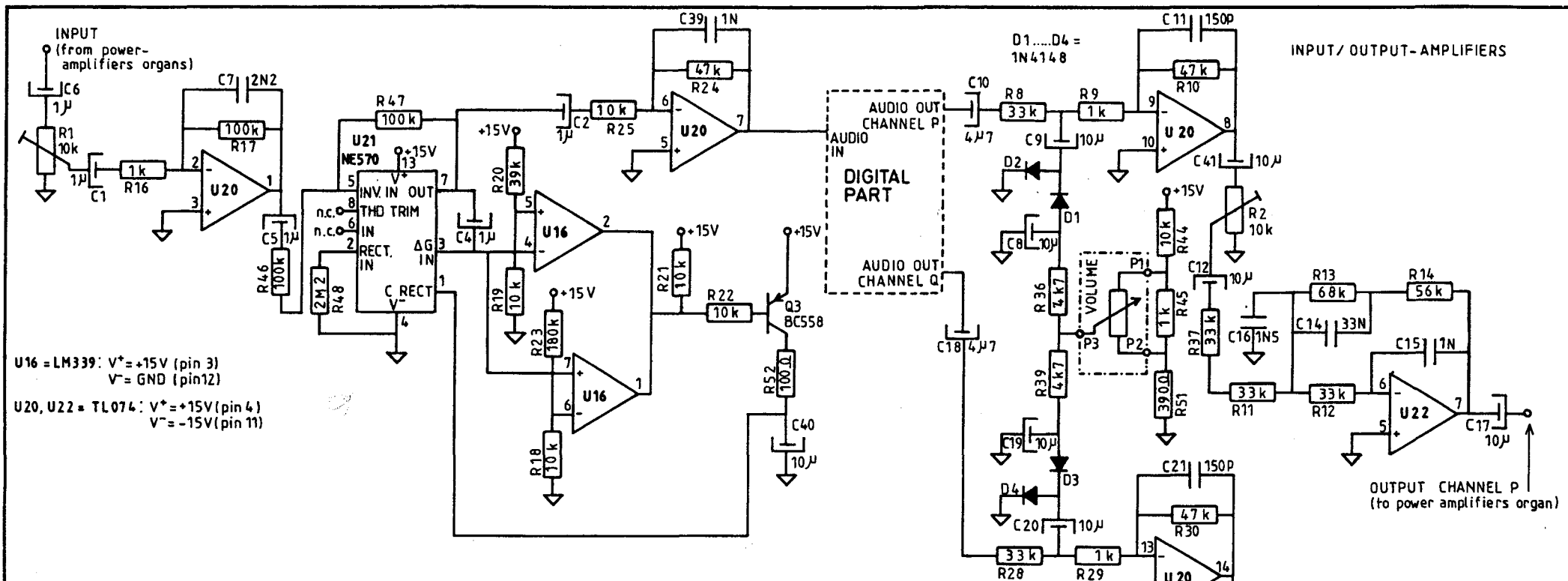
copyright: **JOHANNUS Orgelbouw b.v.**  
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Tel.08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238

APPENDIX II  
DIGITAL ECHO UNIT





<b>POSITION DIAGRAM</b>			
DESIGN:	R.B/M.T.H	17-08-87	<b>JOHANNUS</b> DIGITAL ECHO UNIT
DRAWN:	VERSCHOOR	23-08-88	
MODIFIED:	-	-	
copyright: <b>JOHANNUS Orgelbouw b.v.</b> Morsestraat 28 6716AH EDE HOLLAND Tel.08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			page II-1



**INPUT/OUTPUT-AMPLIFIERS, MODE SWITCH/RESET**

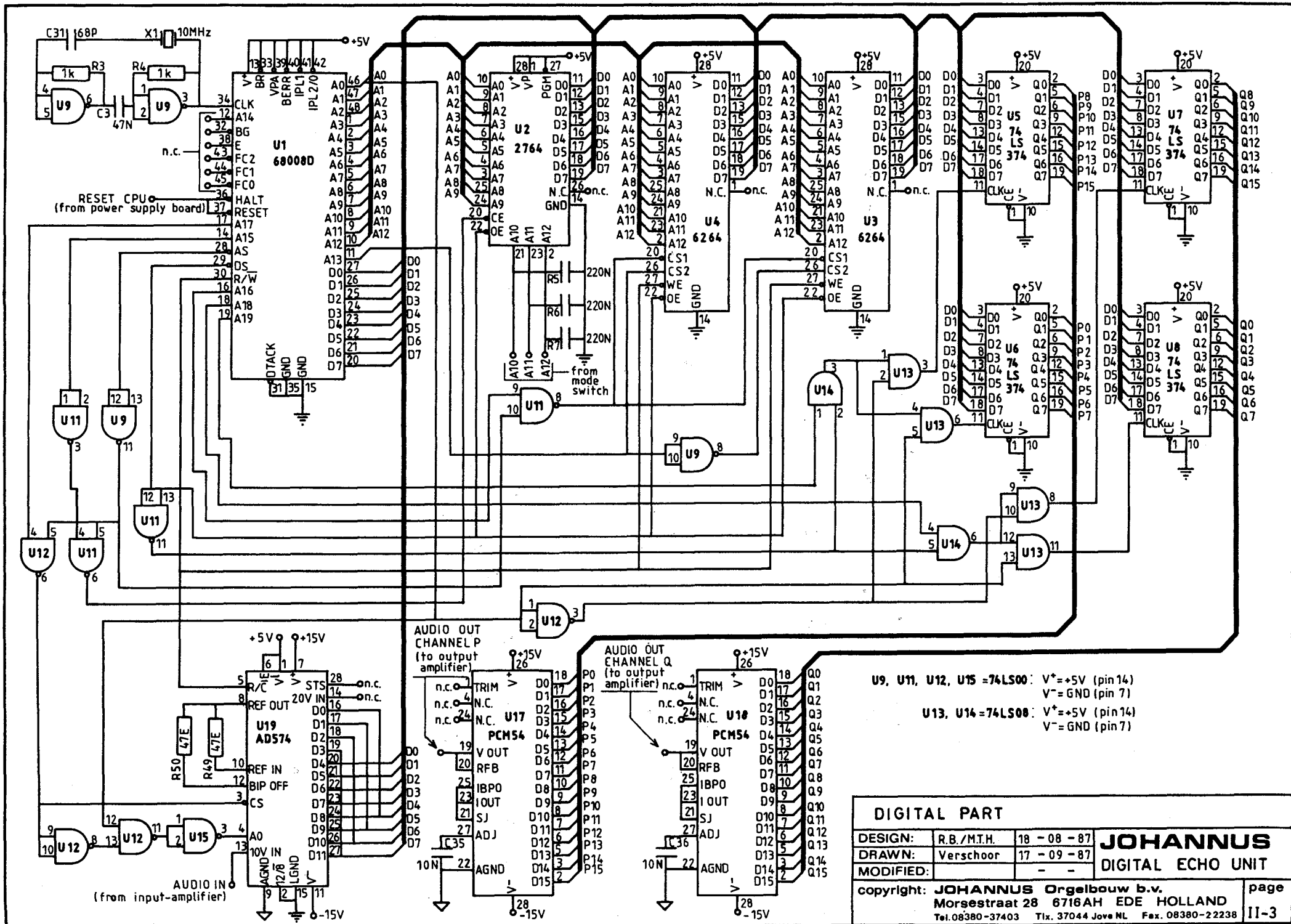
**CIRCUIT & CONNECTOR PINNING**

DESIGN:	RB/MTH	15-09-87	<b>JOHANNUS</b>
DRAWN:	Verschoor	21-09-87	
MODIFIED:	-	-	

**DIGITAL ECHO UNIT**

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page **II-2**



U9, U11, U12, U15 = 74LS00: V\* = +5V (pin 14)  
 V- = GND (pin 7)  
 U13, U14 = 74LS08: V\* = +5V (pin 14)  
 V- = GND (pin 7)

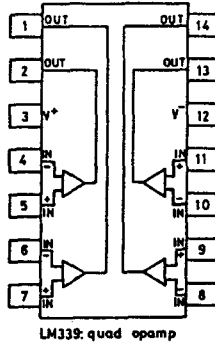
DIGITAL PART			
DESIGN:	R.B./M.T.H.	18 - 08 - 87	<b>JOHANNUS</b> DIGITAL ECHO UNIT
DRAWN:	Verschoor	17 - 09 - 87	
MODIFIED:	-	-	
copyright: JOHANNUS Orgelbouw b.v. Morsestraat 28 6716AH EDE HOLLAND Tel. 08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			page 11-3

A K

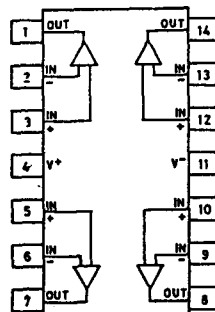
1N4148



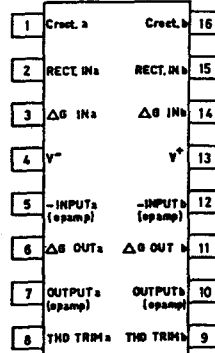
BC558 (bottomview)



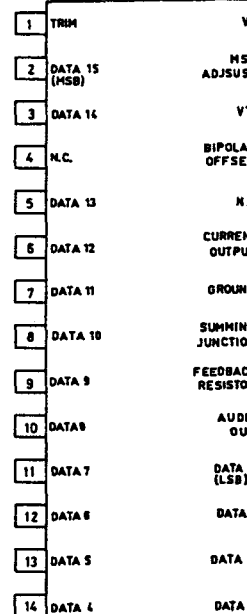
LM339: quad opamp



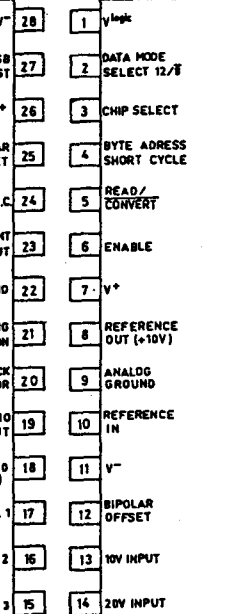
TL074: quad opamp  
LM324: quad opamp



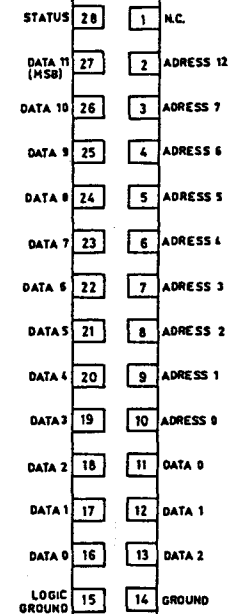
NE 570: dual compander



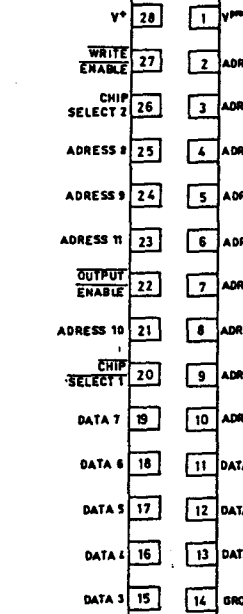
PCM54: 16-bit d/a-converter



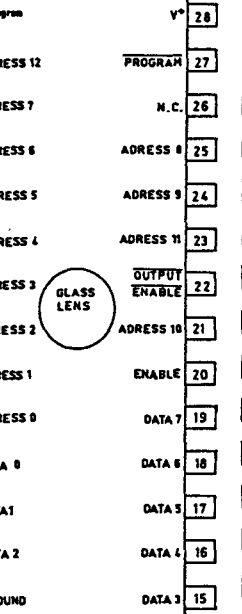
ADC574: 12-bit a/d converter



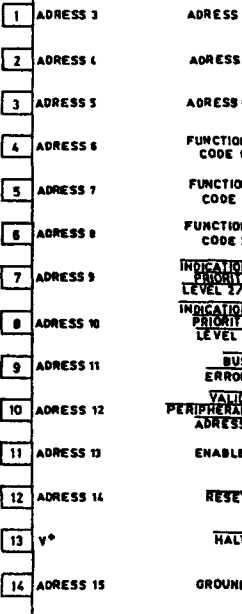
6264: 64k random access memory



2764: 64k ultraviolet erasable programmable read only memory



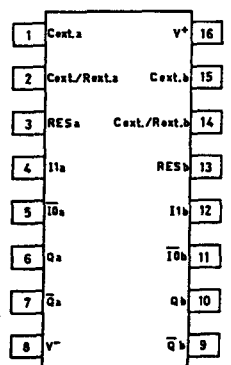
7400: quad nand



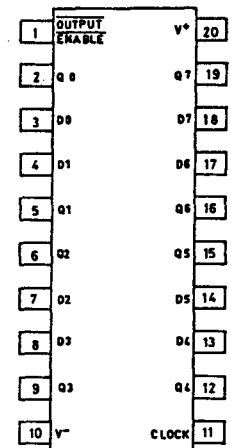
7408: quad and



68008: 8-/32-bit micro-processor with 8-bit data bus



4528: dual monostable multivibrator

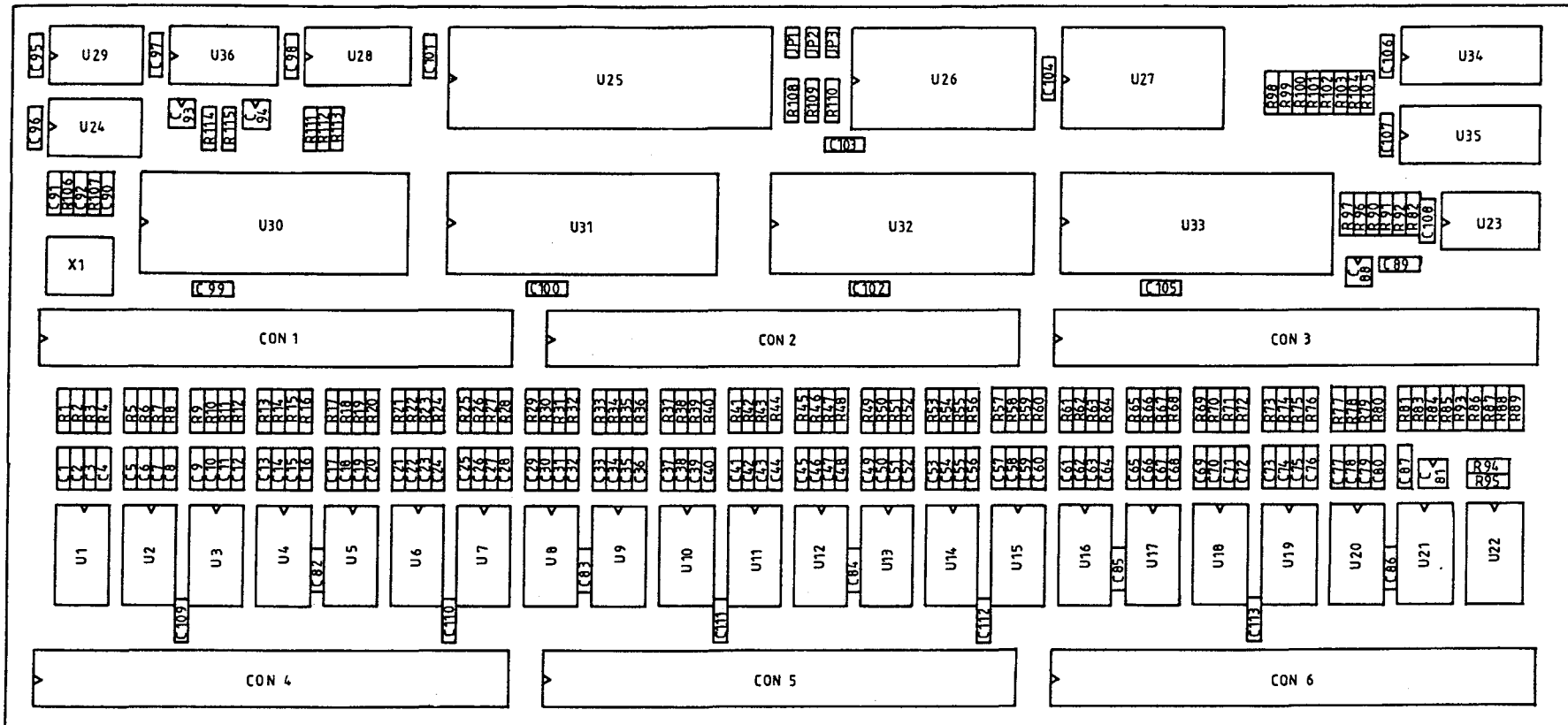


74374: octal D-flip-flop with 3-state outputs

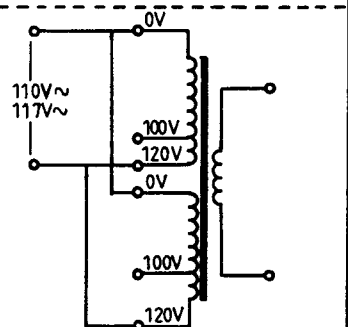
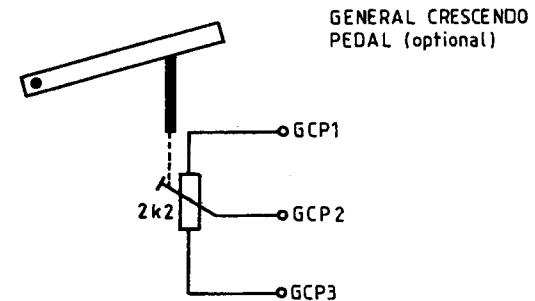
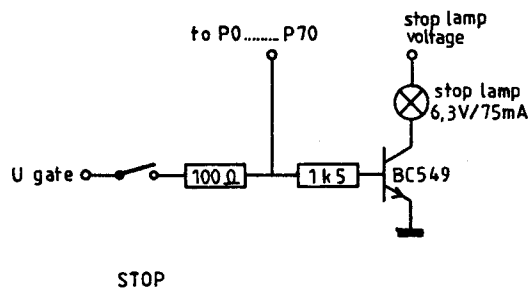
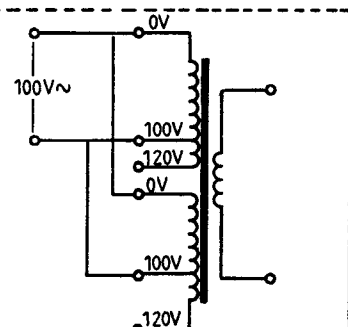
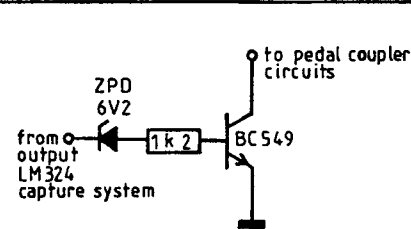
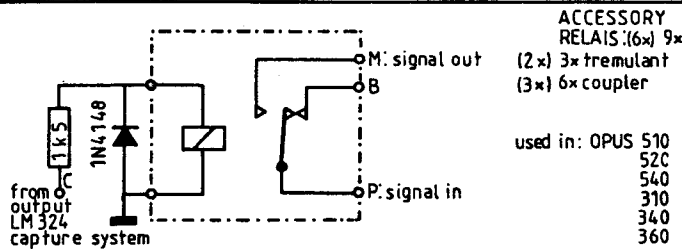
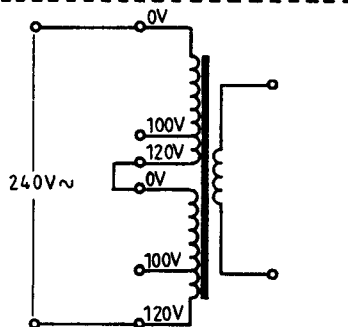
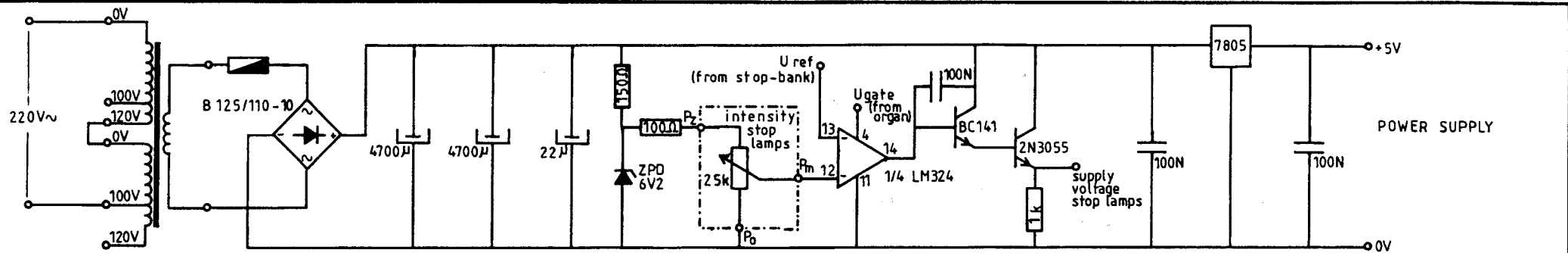
GENERAL INFORMATION SEMI CONDUCTORS			
DESIGN:	- -	<b>JOHANNUS</b>	
DRAWN:	Verschoor	22-09-87	DIGITAL ECHO UNIT
MODIFIED:	- -		
copyright: JOHANNUS Orgelbouw b.v. Morsestraat 28 6716AH EDE HOLLAND			page
Tel.08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			II-4

APPENDIX III  
DIGITAL CAPTURE

1980-1981



<b>POSITION DIAGRAM</b>		
DESIGN:	R. B	24 - 10 - 87
DRAWN:	VERSCHOOR	23 - 08 - 88
MODIFIED:	-	-
copyright: <b>JOHANNUS Orgelbouw b.v.</b>		page
Morsestraat 28 6716AH EDE HOLLAND		III-1
Tel. 08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238		

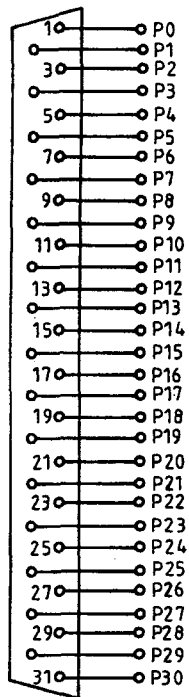


POWER SUPPLY, ACCESSORY RELAYS, INVERTOR PEDAL

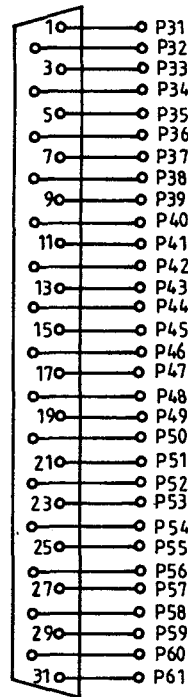
COUPLER, STOP & GENERAL CRESCENDO PEDAL

DESIGN:	R.B.	24 - 10 - 87	<b>JOHANNUS</b> DIGITAL CAPTURE
DRAWN:	Verschoor	16 - 11 - 87	
MODIFIED:	-	-	

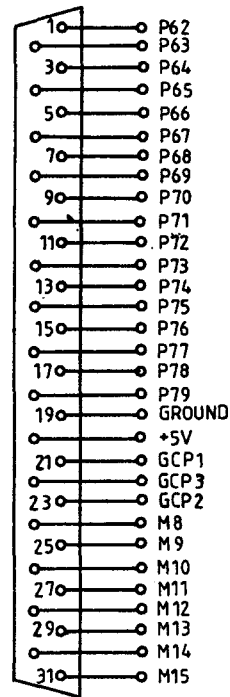
CONNECTOR 1



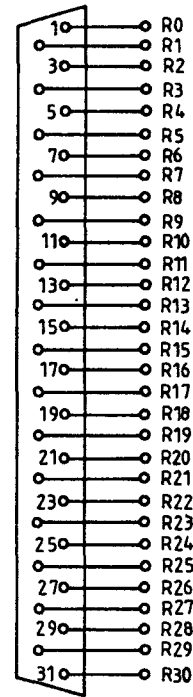
CONNECTOR 2



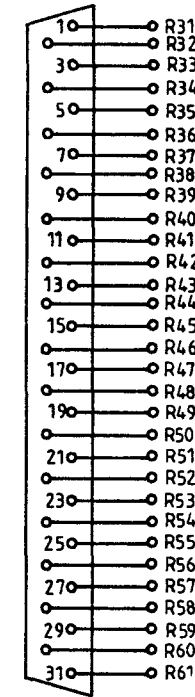
CONNECTOR 3



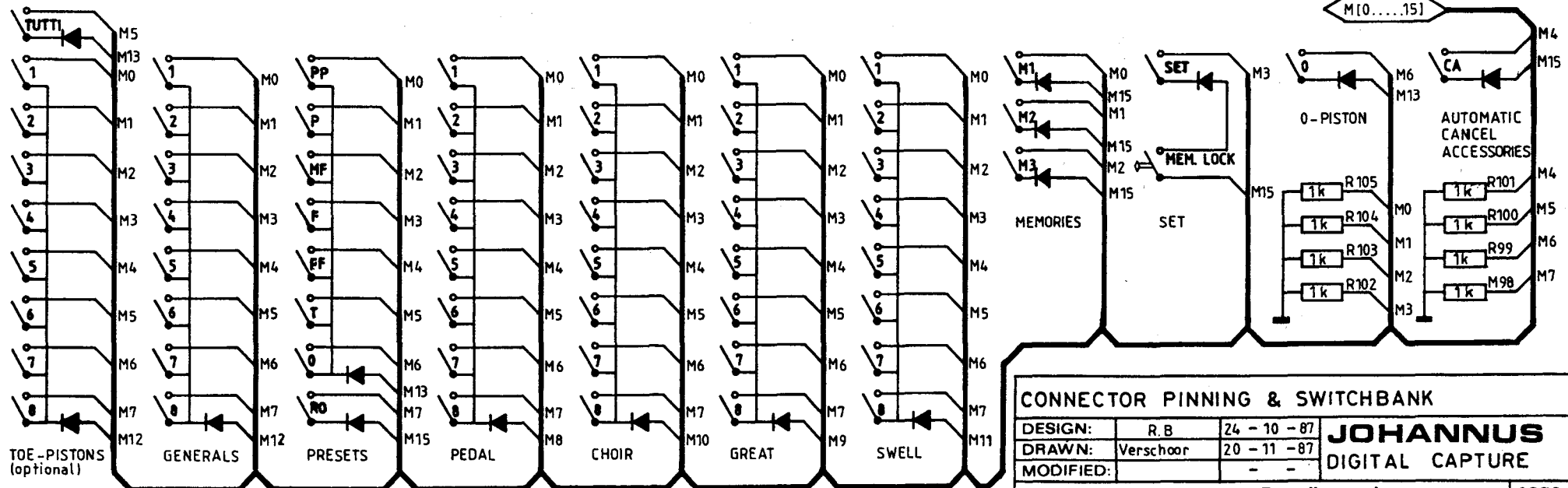
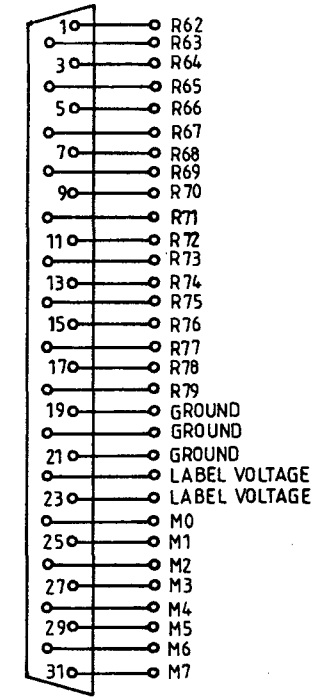
CONNECTOR 4



CONNECTOR 5



CONNECTOR 6



## CONNECTOR PINNING &amp; SWITCHBANK

DESIGN:	R. B	24 - 10 - 87
DRAWN:	Verschoor	20 - 11 - 87
MODIFIED:	-	-

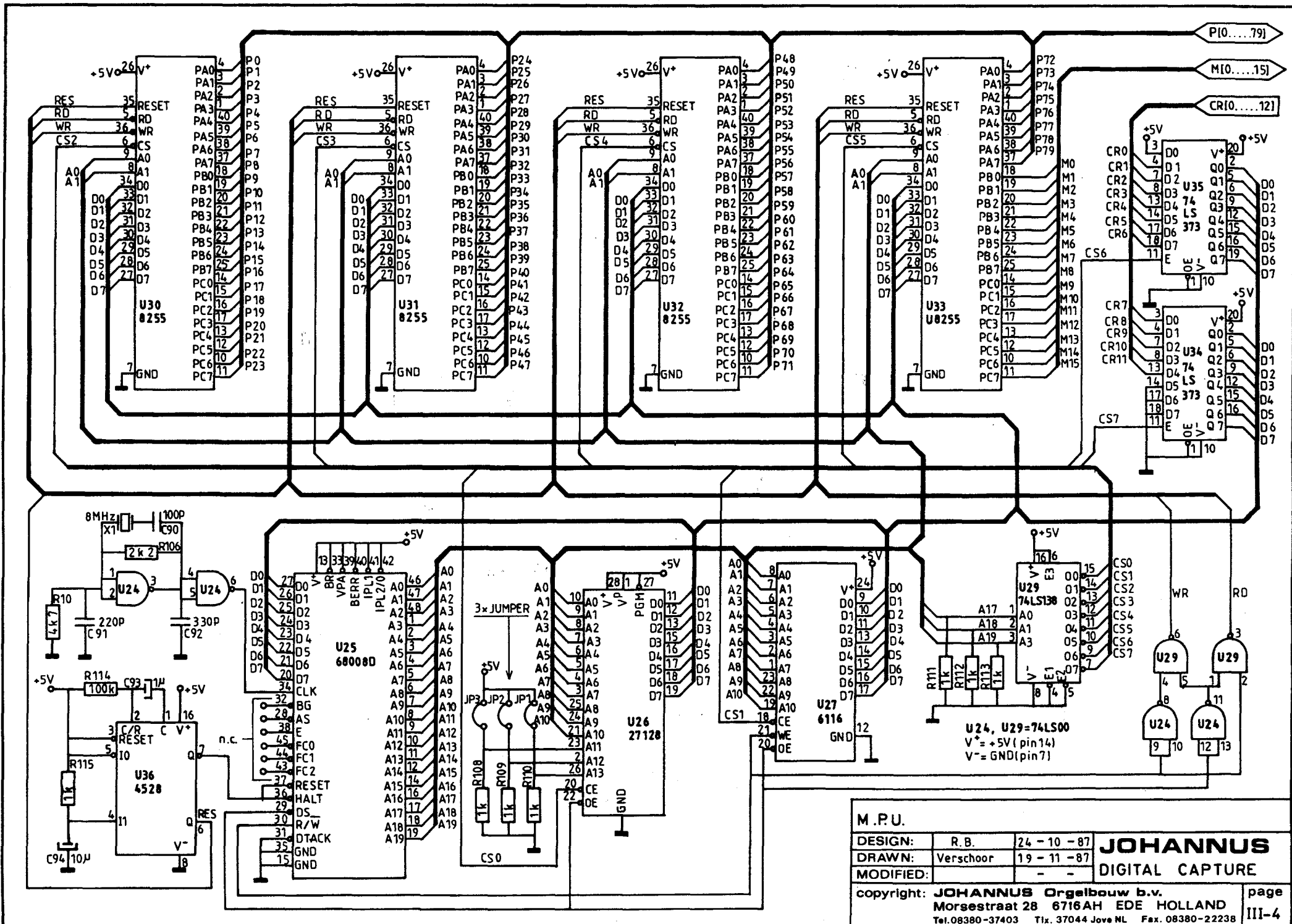
**JOHANNUS**  
DIGITAL CAPTURE

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Tel. 08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238

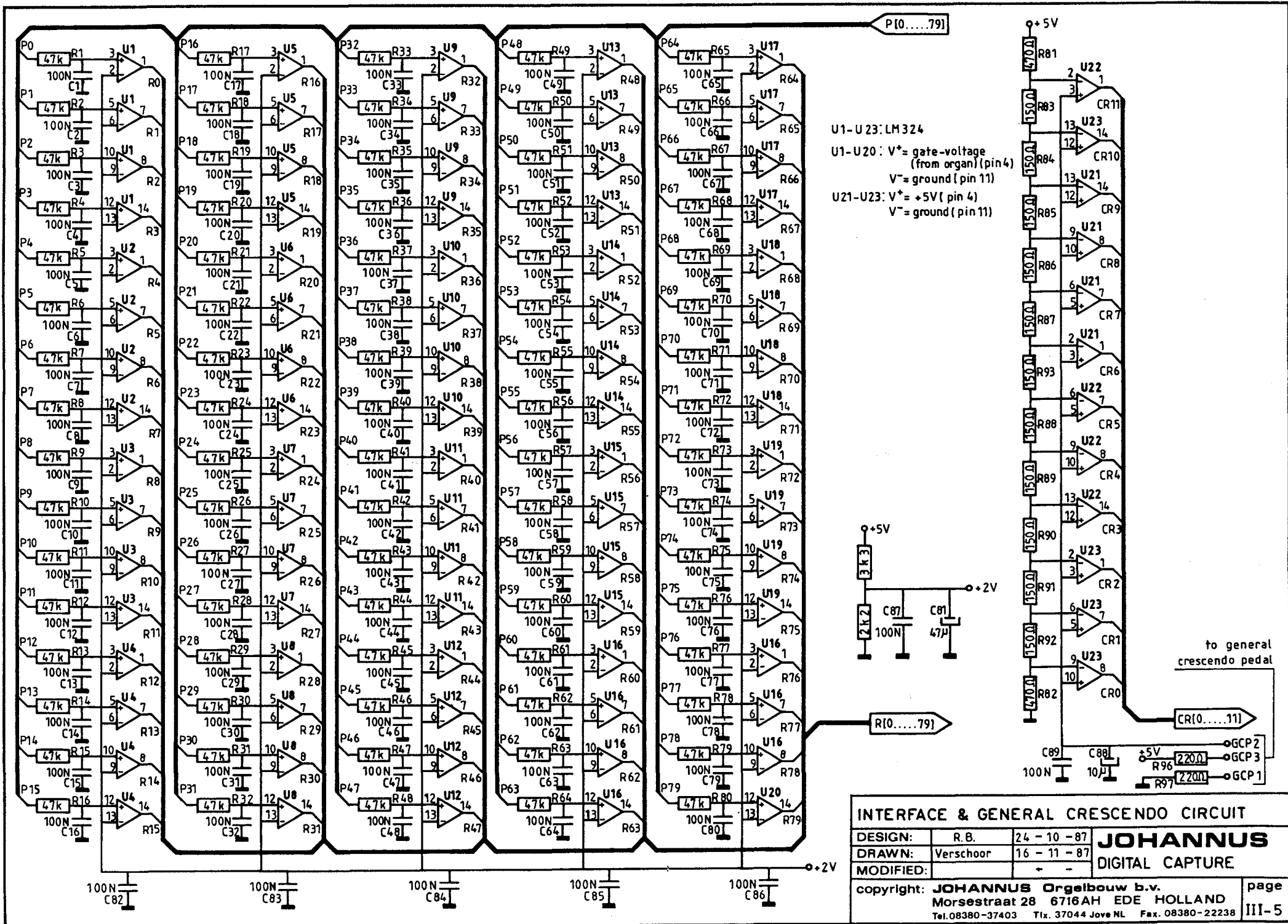
page

III-3

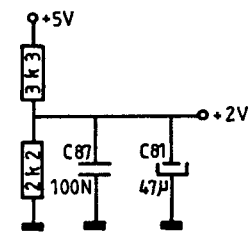




M.P.U.			
DESIGN:	R.B.	24 - 10 - 87	<b>JOHANNUS</b> DIGITAL CAPTURE
DRAWN:	Verschoor	19 - 11 - 87	
MODIFIED:	-	-	
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Tel. 08380-37403 Tlx. 37044 Jove NL Fax. 08380-22238			

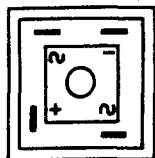
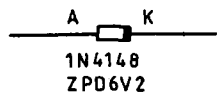


U1-U23: LM324  
 U1-U20: V\* = gate-voltage (from organ) (pin 4)  
 V = ground (pin 11)  
 U21-U23: V\* = +5V (pin 4)  
 V = ground (pin 11)

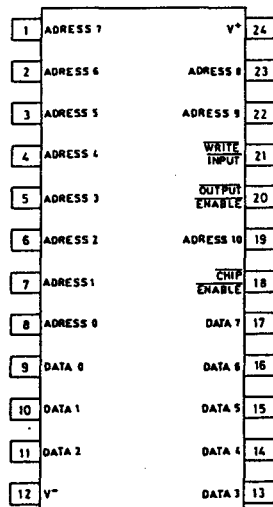
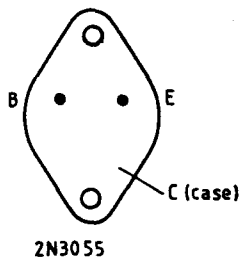
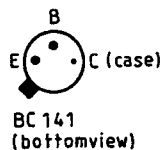
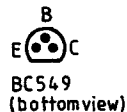


**INTERFACE & GENERAL CRESCENDO CIRCUIT**

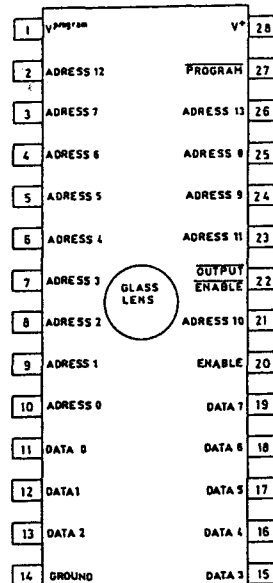
DESIGN:	R.B.	24 - 10 - 87	<b>JOHANNUS</b> DIGITAL CAPTURE
DRAWN:	Verschoor	16 - 11 - 87	
MODIFIED:			



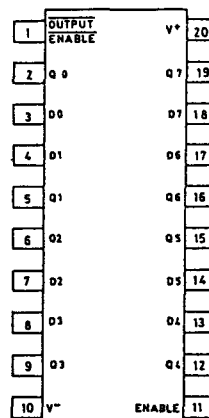
B125/110 - 10



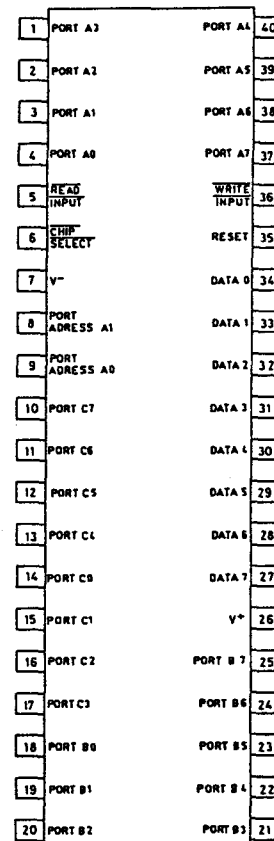
6116: 16k non-volatile random access memory



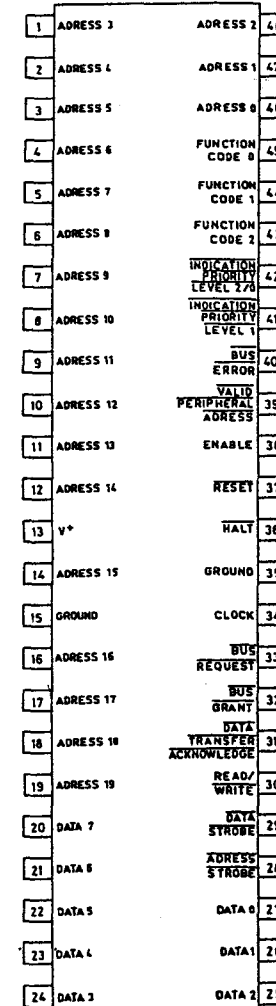
27128: 128k ultraviolet erasable programmable read only memory



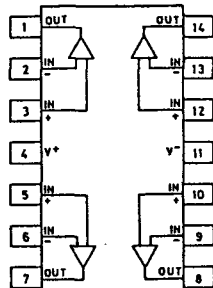
74373: octal transparent latch with 3-state outputs



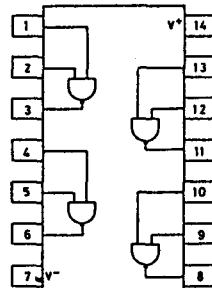
8255: programmable input/output interface



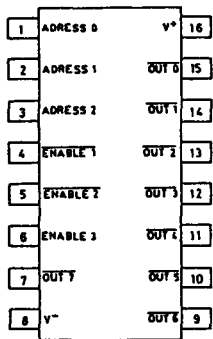
68008: 8-/12-bit micro-processor with 8-bit data bus



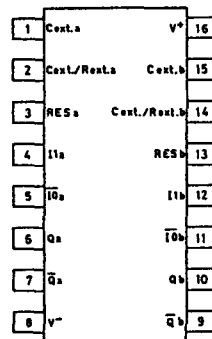
TL074: quad opamp  
LM324: quad opamp



7400 quad nand



74138: 1-of-8 decoder/demultiplexer



4528: dual monostable multivibrator

GENERAL INFORMATION SEMI-CONDUCTORS

DESIGN:	- -	<b>JOHANNUS</b> DIGITAL CAPTURE
DRAWN:	Verschuur 23-11-87	
MODIFIED:	- -	

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