SCHEMATIC DIAGRAMS
MOD.

PK 4900

DIGITAL SYNTESIZER

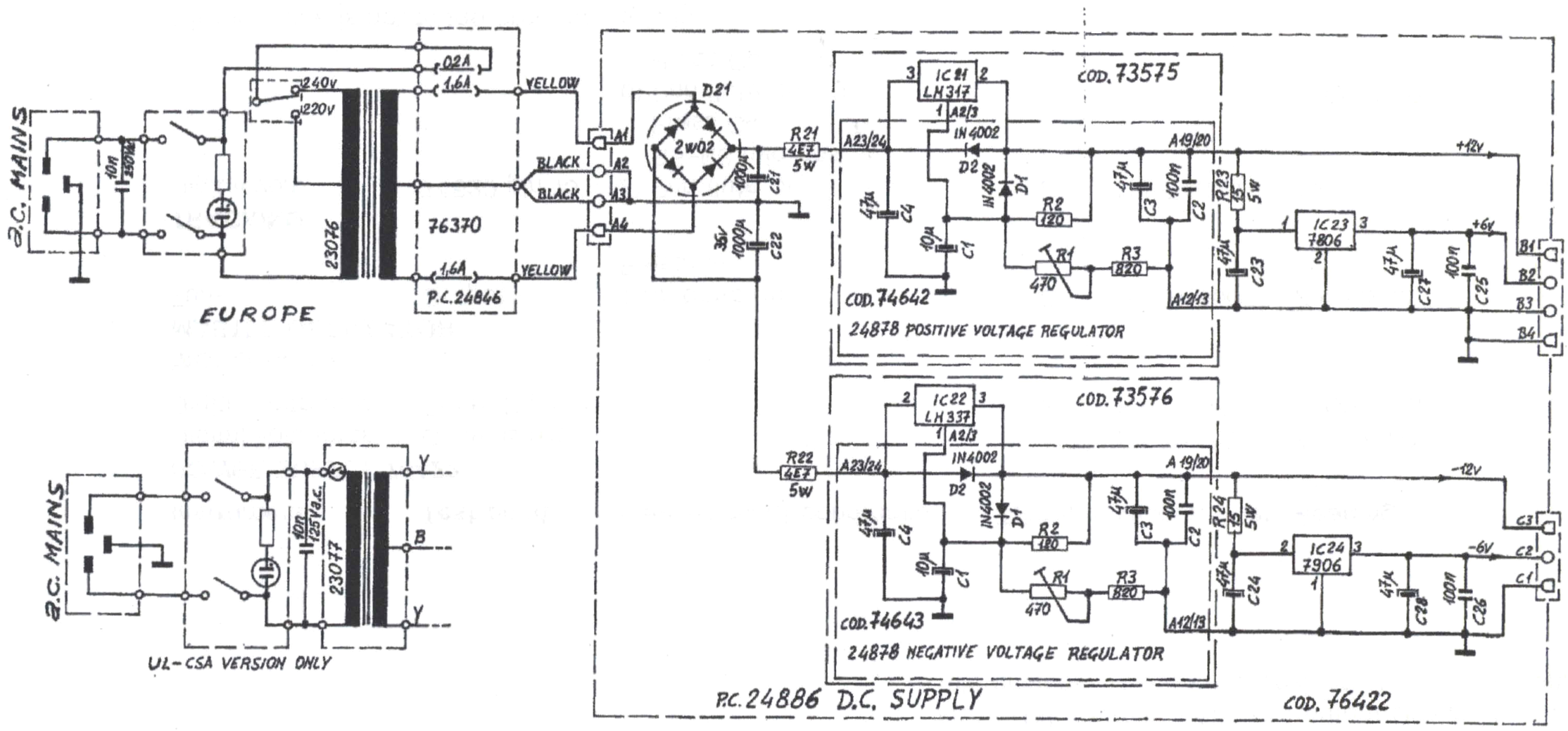
GEM® A PRODUCT OF general electro music

MONDAINO · FO · ITALY

PART LIST PK 4900

1) Flat cable wires: specify conductor size and length.
2) Printed board assy: refer to schematics for assy code.

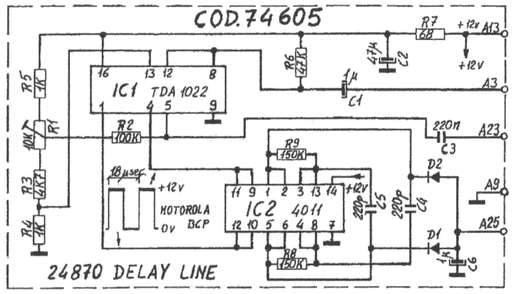
Alluminum panel	18281
Keyboard, mechanics assy	80027
Potentiometer knob	19101
Switch knob, black	15412
Switch knob, yellow	15436
Switch knob, red	15411
Switch knob, grey	15408
Switch knob, ivory	15410
Switch board, 9 keys	14461
Switch board, 14 keys	14462
Potentiometer, 10K	7544
Potentiometer, 10K click-stop	7543
Potentiometer, 470K log.	7594
Potentiometer, 1M	7610
Sharp key, black	15999
Natural key, white	15998
Spring for white key	16002
Spring for black key	16001
Spring contact	16055
Bus bar L, silvered	16086
Bus bar U, silvered	16085
Mains transformer, Europe	23076
Mains transformer, U.L. & C.S.A.	23077
Mains switch, Europe	11239
Mains switch, U.L. & C.S.A.	11237
Jack	14200
Mains cable, Europe	13297
Mains cable, U.L. & C.S.A.	13283
M108, tone generator, poly	10015
M110, tone generator, mono	10012
4070, quad ex-or	10543
4093, quad 2-input nand	10565
4016, quad bilat. switch	10518
4013, dual "D", flip-flop	10512
1458, dual operat.amp.	10051
LM324, quad operat.amp	10056
SSM 2056, A.D.S.R.	10328
CA 3080, O.T.A.	10002
SSM 2044, V.C.F.	10329
LF 353, dual j-fet op.amp.	10061
TDA 1022 ,delay line	10010
4011, dual 2-input nand	10507
4001, quad 2-input nor	10503
74LS3221, dual monostable	10030
741, op.amp.	10024
7806, voltage regulator	10063
7906, voltage regulator	10064
LM 317, voltage regulator	10066
LM 337, voltage regulator	10067
FDH999, signal diode	8103
IN 4002, rectifier diode	8156
LD 41A, red led	8702
BF494, npn transistor	9305
BC 338, npn transistor	9152
P 1087, fet p.ch. transistor	9856
Transistor, noise generator	9401
BC 173C, npn transistor	9271
2W02, bridge rectifier	18168



CALIBRATION PROCEDURE FOR PK 4900

GENERAL CONDITIONS: Instrument switched-on, All tabs excluded, Mono on, Volume to max, Tunes in mid-position, Tone in mid-position, Auto bender on, Portamento to minimum.

Instrument	Test point	Measurement conditions	Trimmer	Diagram Ref.	Reading
POWER SUPPLY 76422					
Digital voltmeter	Conn. B pin 1	/	A	R1-73575	+ 12V·±0,1
Digital voltmeter	Conn. C pin 3	/	B	R1-73576	− 12V.±0,1
MONO 74649					
MASTER OSCILLATOR					
Tuner	Output	Trombone on Press A4	C	R1−74650	Zero beat
TRACKING					
Digital volt.	74620 pin 15	a) Pan flute on R5−R8 mid pos. Press C4	E	R8−74620	4V.
		b) Pan flute on Press C3			* 3V.±0,05 or Vx
* If this value is not found proceed as follows:					
		c) Pan flute on Press C4	F	R5-74620	Vx+1V.
		d) Pan flute on Press C4	E	R8-74620	4V.
		e) Pan flute on Press C3	/	/	** 3V.±0,05
** If this value is not found repeat from c) to e).					
ADSR-VCF					
Oscilloscope D.C. 1V./cm 20 mS./cm.	74646 pin 5	Trombone on Press C4	G	R8-74637	Attack 60ms.
MONO VCF					
Oscilloscope 1V./cm.	74641 pin 8	Tone to mid-position Reed on Press C6	H	R7-74641	Sinusoidal max. output
ADSR-VCA					
Oscilloscope 1V./cm. 0,5 mS./cm.	74609 pin 17	a) Trombone on R7-74609 (I) fully counte-clockwise Press C6	L	R8-750609	Attack 2 mS.
		b) Trombone on R7-74609 fully clockwise Press C6	I	R7-74609	Adjust to eliminate discontinuity after attack trailing edge
MONO VCA					
By ear	/	Trumpet on Press C6 repeatetly	M	R7-74636	Miminize click
LFO					
Oscilloscope 1V./cm. 20 mS./cm.	74623 pin 5 / /	a) Mod. on Trombone on Press C4	N	R15-74623	Period = 190 mS. (5,2 Hz.)
1V./cm. 200 mS./cm.	/ /	b) Funky solo on Mod. on Press C4	O	R14-74623	Period = 1,5 S. (0,6 Hz.)
MONO LFO DELAY LINE					
Oscilloscope 2V./cm. 200 mS./cm.	Pin 14-IC1	/	P	R3-74625	Period = 1170 mS. (0,85 Hz.)
Oscilloscope 2µS./cm. 2V./cm.	74605 Pin 4-IC2	R11-74625 (Q) fully clockwise	R	R10-74625	Period = 18 µS. (55 KHz)
By ear	/	Pop synthy Mono chorus on Press C4	Q	R11-74625	Proper modulation
DELAY LINE					
By ear	/	Jazz pulse on Poly on Volume mono max Mono chorus on Violins on Press a chord	S	R1-74605	Minimize distortion
NOISE					
Oscilloscope 0,5V./cm. 5 mS./cm.	74618 Pin 7-IC1	Pan flute on	T	R10-74618	About 0,7V.
POLY 74648					
POLY MASTER OSCILLATOR					
By ear	/	Brass 1 on Poly mode Trombone on Press A4	D	R1-74650	Zero beat
ADSR-BRASS					
Oscilloscope 1V./cm. 10 mS./cm.	74639 pin 17	Poly on Brass 1 on Press C4	U	R8-74639	Attack = 60 mS.
POLY VCF					
Digital volt.	74612 Pin 13-IC2	Brass 1 on C4 Pressed	V	R7-74612	−34 mV.
POLY VCA					
By ear	/	Poly on Violins on Press C4 Repeatetly	Z	R7-74611	Minimeze click
LFO					
Oscilloscope 1V./cm. 20 mS./cm.	74651 pin 5 /	Vibrato delay on Funky solo on	J	R15-74651	Period 190 mS. (5,2 Hz.)
POLY LFO DELAY LINE					
Oscilloscope 2.V./cm. 20 ms./cm.	74629 Pin 14 IC1	/	Y	R3-74629	Period 160 mS. (6,3 Hz.)
2µS./cm. 2V./cm.	74605 Pin 14 IC1	R11-74629 (K) fully clockwise	W	R10-74629	Period 18µS. (55 KHz.)
By ear	/	Violins on Press C4	K	R11-74629	Proper Modulation
DELAY LINE					
By ear	/	Poly on Violins on Press a chord	X	R1-74605	Minimize distortion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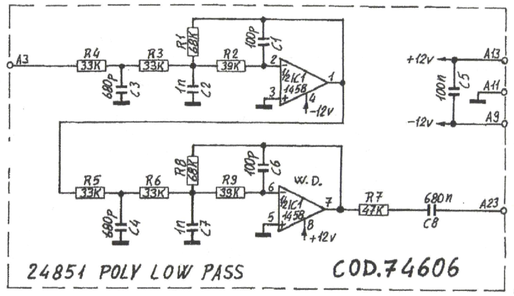
IC1 TDA 1022
IC2 4011
MOTOROLA
24870 DELAY LINE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24851 POLY LOW PASS
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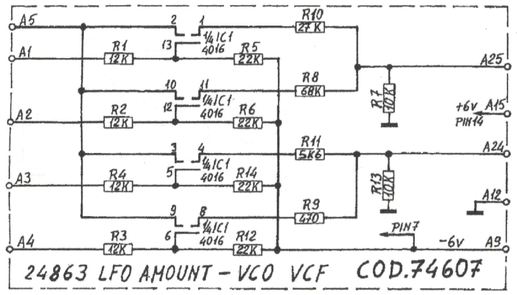
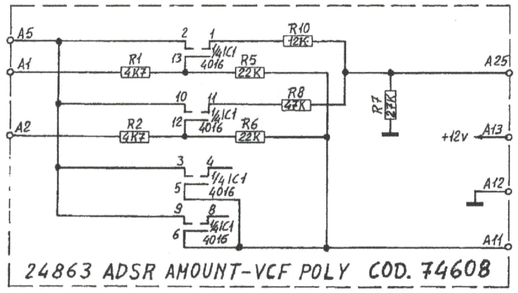

24863 LFO AMOUNT - VCO VCF
COD.74607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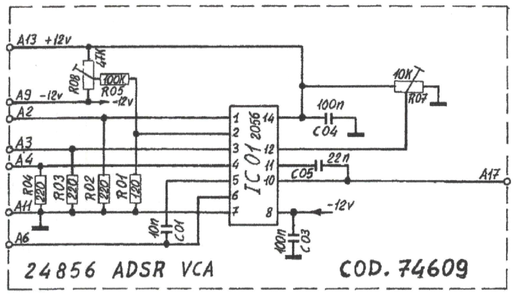
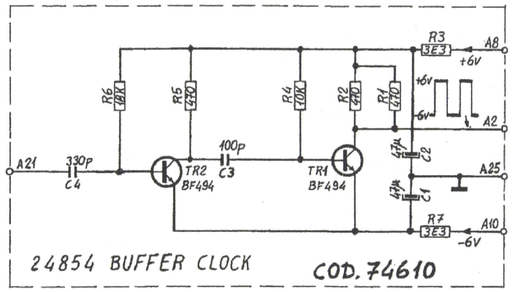

IC 01 8056
24856 ADSR VCA
COD. 74609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TR1 BF494
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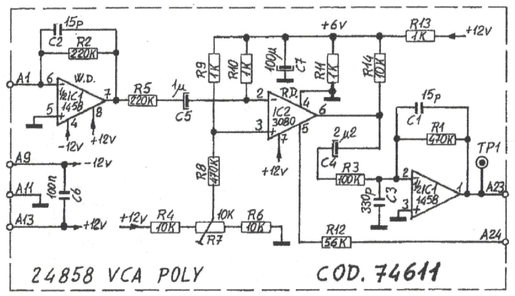
COD. 74610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IC2 3080
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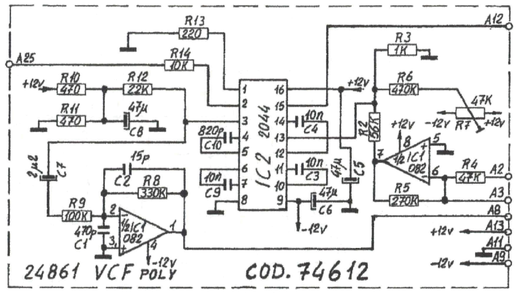
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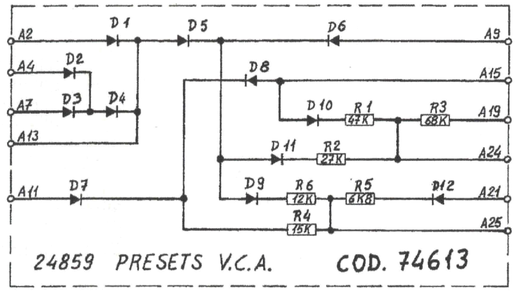
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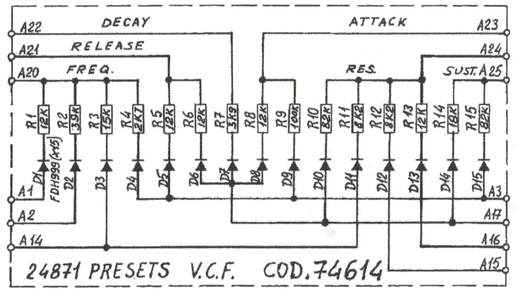
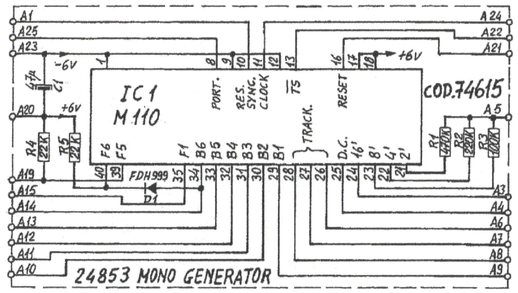
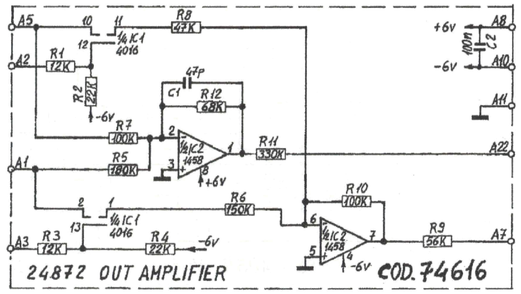

DECAY
ATTACK
RELEASE
FREQ.
RES.
SUST.
24871 PRESETS V.C.F.
COD.74614


IC1
M110
COD.74615
24853 MONO GENERATOR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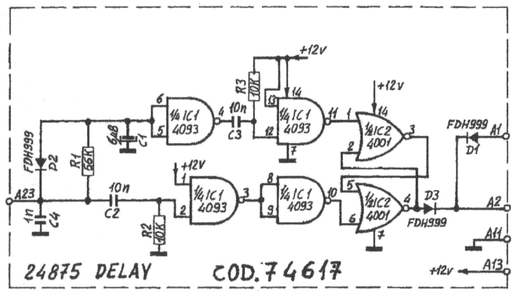
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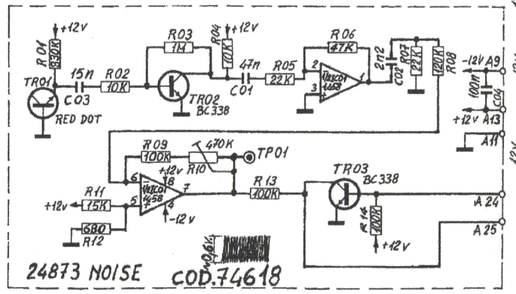
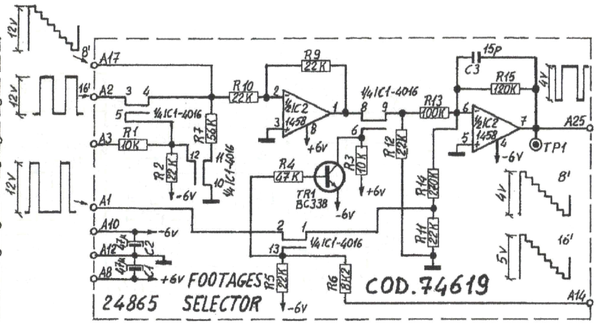

RED DOT
TR02 BC338
TR03 BC338
24873 NOISE
COD.74618


FOOTAGES
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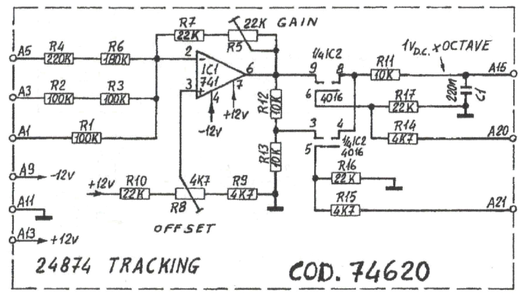
COD. 74619


22K GAIN
OCTAVE
OFFSET
24874 TRACKING
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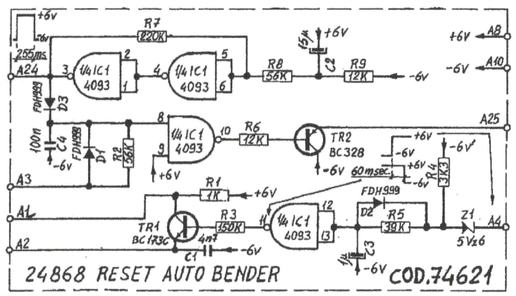
TR2 BC328
TR1 BC173C
24868 RESET AUTO BENDER
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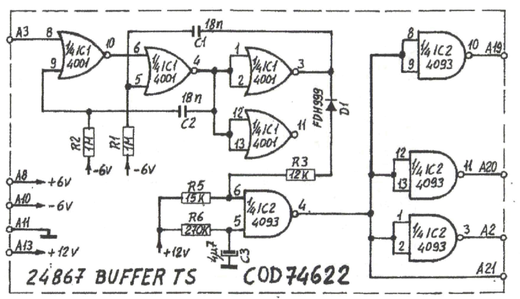
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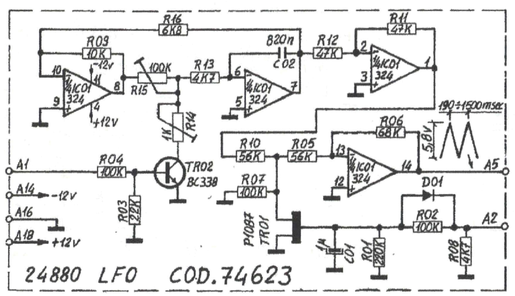
TR02 BC338
24880 LFO
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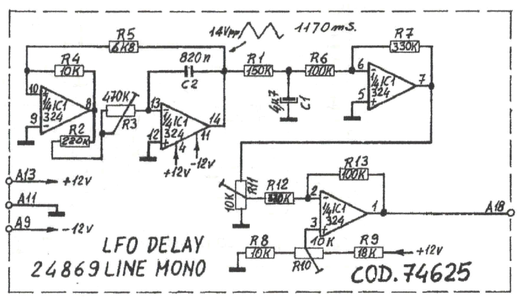
LFO DELAY
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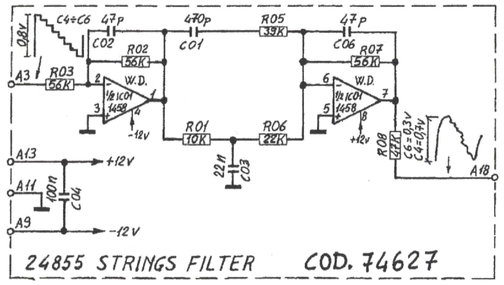
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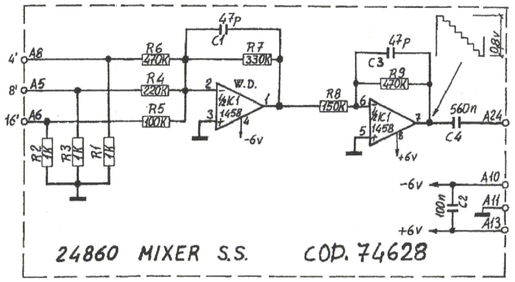
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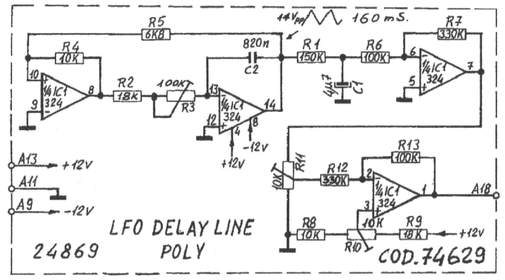
LFO DELAY LINE
POLY
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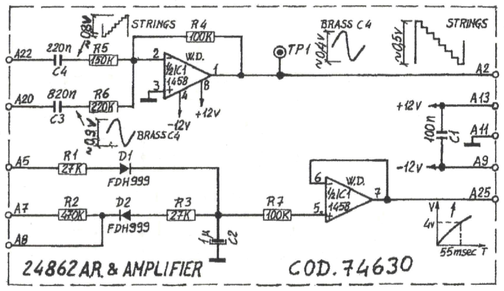
COD. 74629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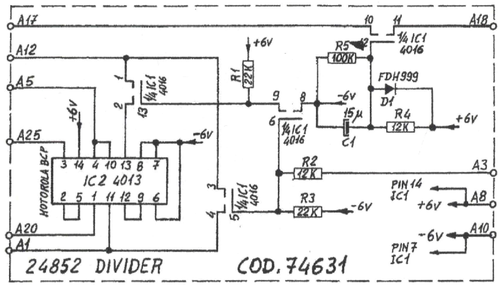
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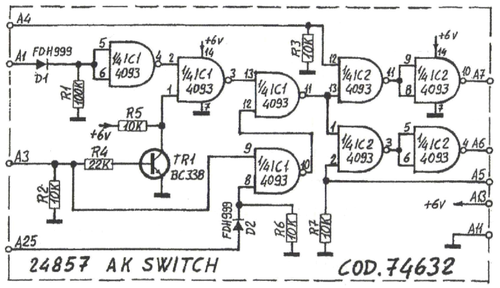
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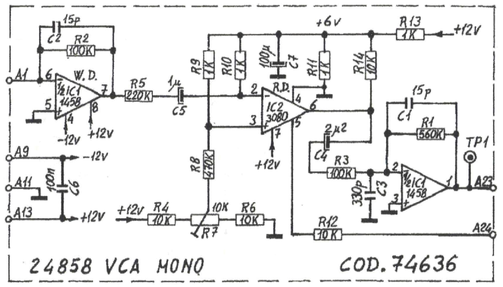
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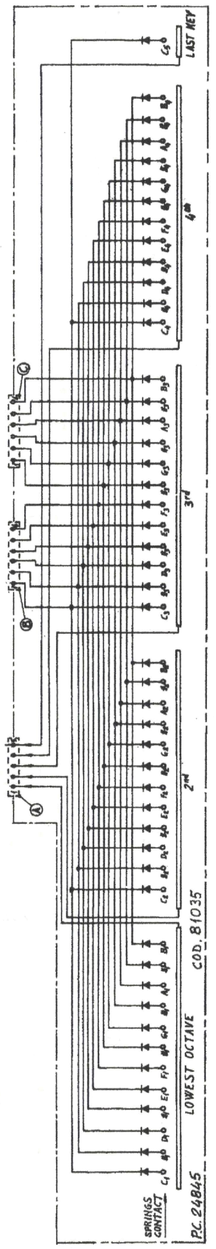
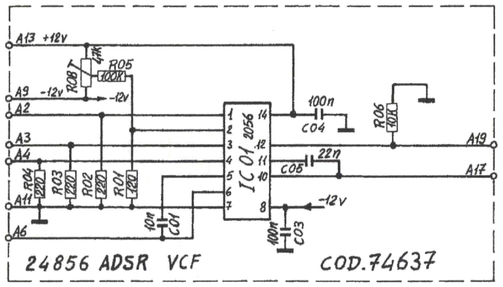

LAST KEY
4th
3rd
2nd
LOWEST OCTAVE
COD. 81035
PL. 24845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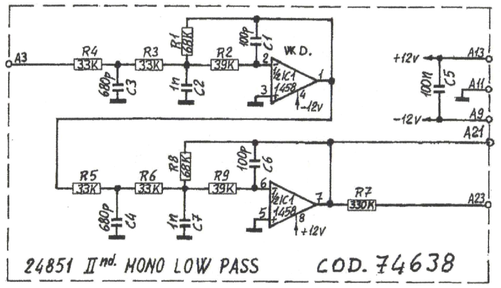
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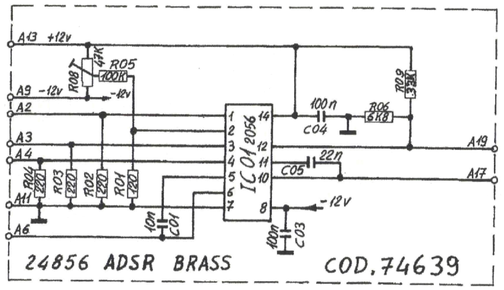
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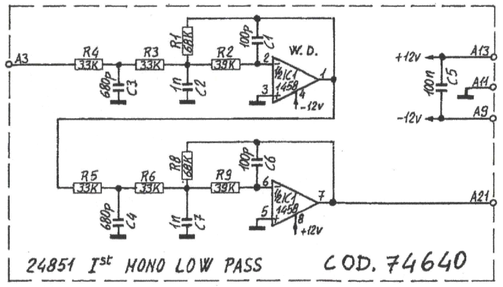
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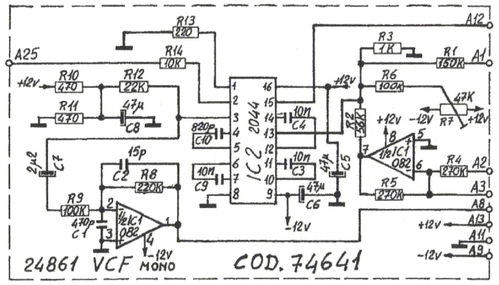
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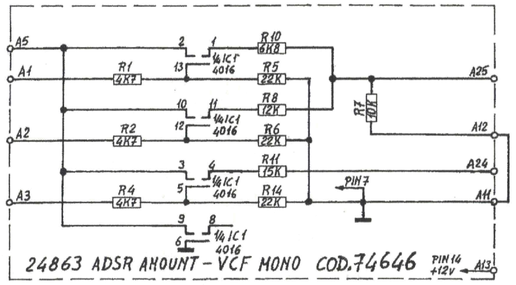
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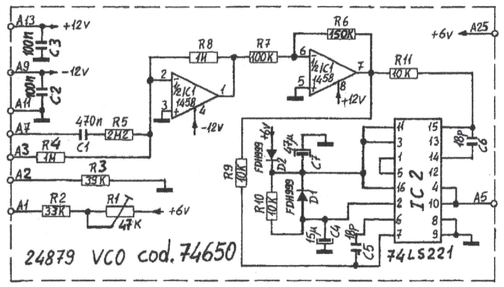
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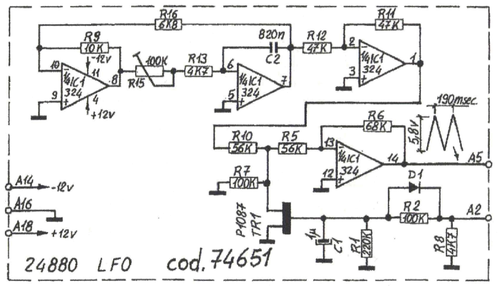
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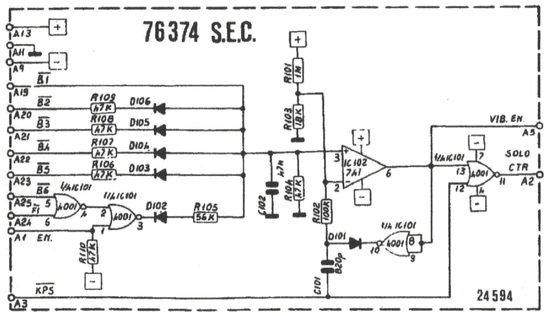
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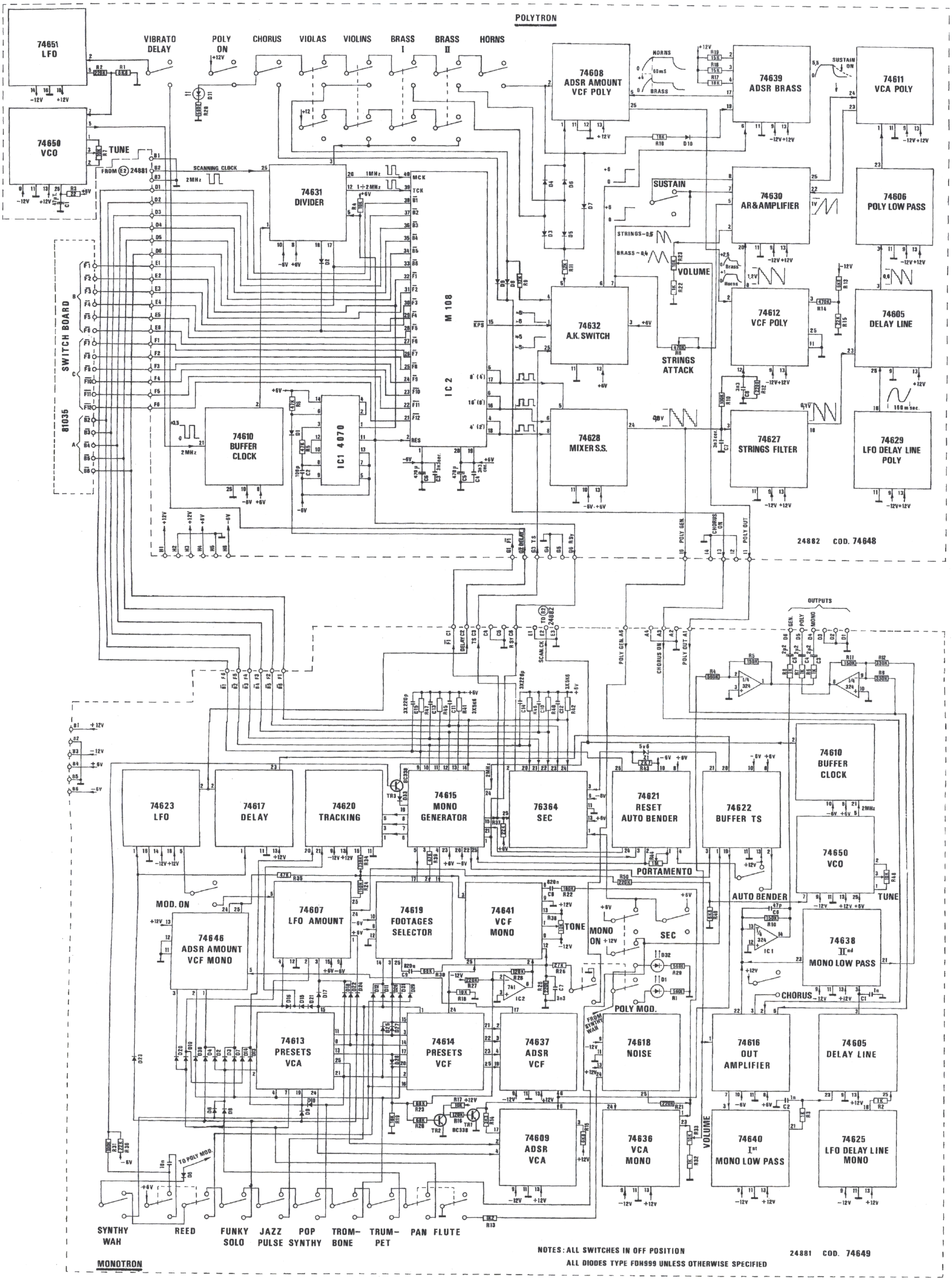

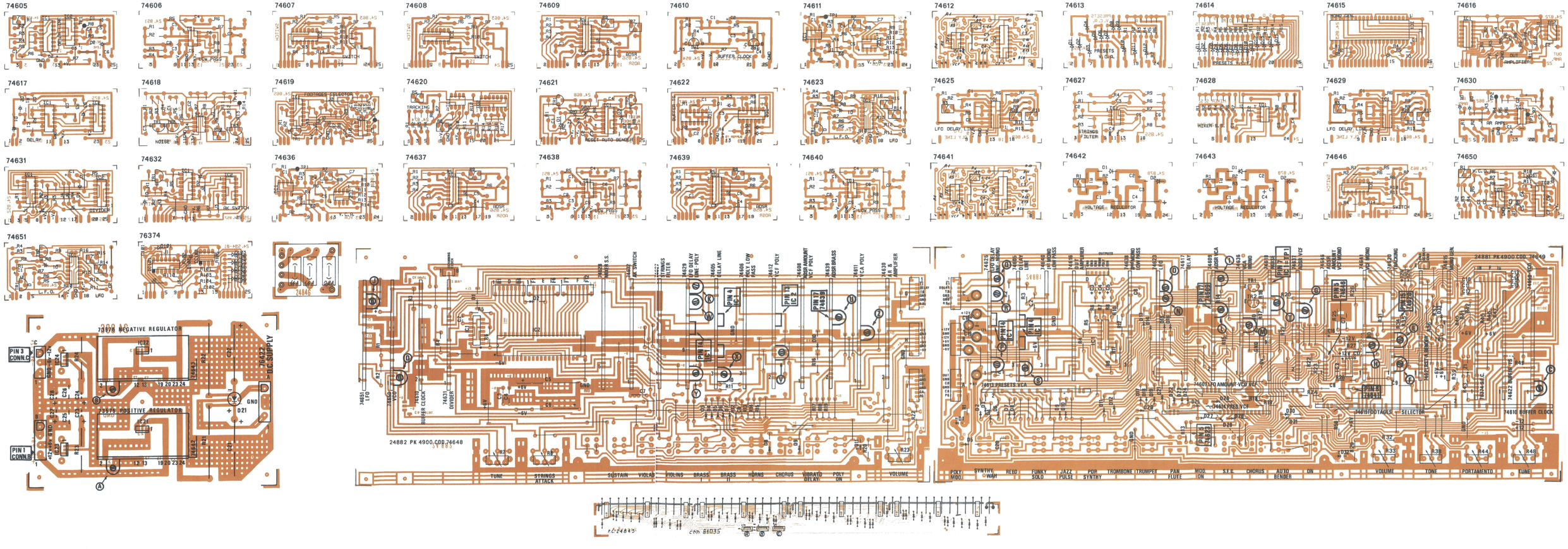
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76374
74846
78070 NEGATIVE REGULATOR
79075 POSITIVE REGULATOR
PIN 3 CONN.C
PIN 1 CONN.B
GND
D21
24882 PK 4900.COD.74648
24881 PK4900.COD.74649
74610 BUFFER CLOCK
74631 DIVIDER
74613 PRESETS VCA
74614 PRESETS VCF
74615 LFO AMOUNT-VCO VCF
74616 FOOTAGES SELECTOR
TUNE
STRINGS ATTACK
SUSTAIN
VIOLAS
VIOLINS
BRASS
BRASS II
HORNS
CHORUS
VIBRATO RELAY
POLY ON
VOLUME
POLY MOD
SYNTHY WAH
REED
FUNKY SOLO
JAZZ PULSE
POR SYNTHY
TROMBONE
TRUMPET
PAN FLUTE
MOD ON
S.E.B.
CHORUS
AUTO BENDER
ON
VOLUME
TONE
PORTAMENTO
TUNE
PC-24845
CON 61035