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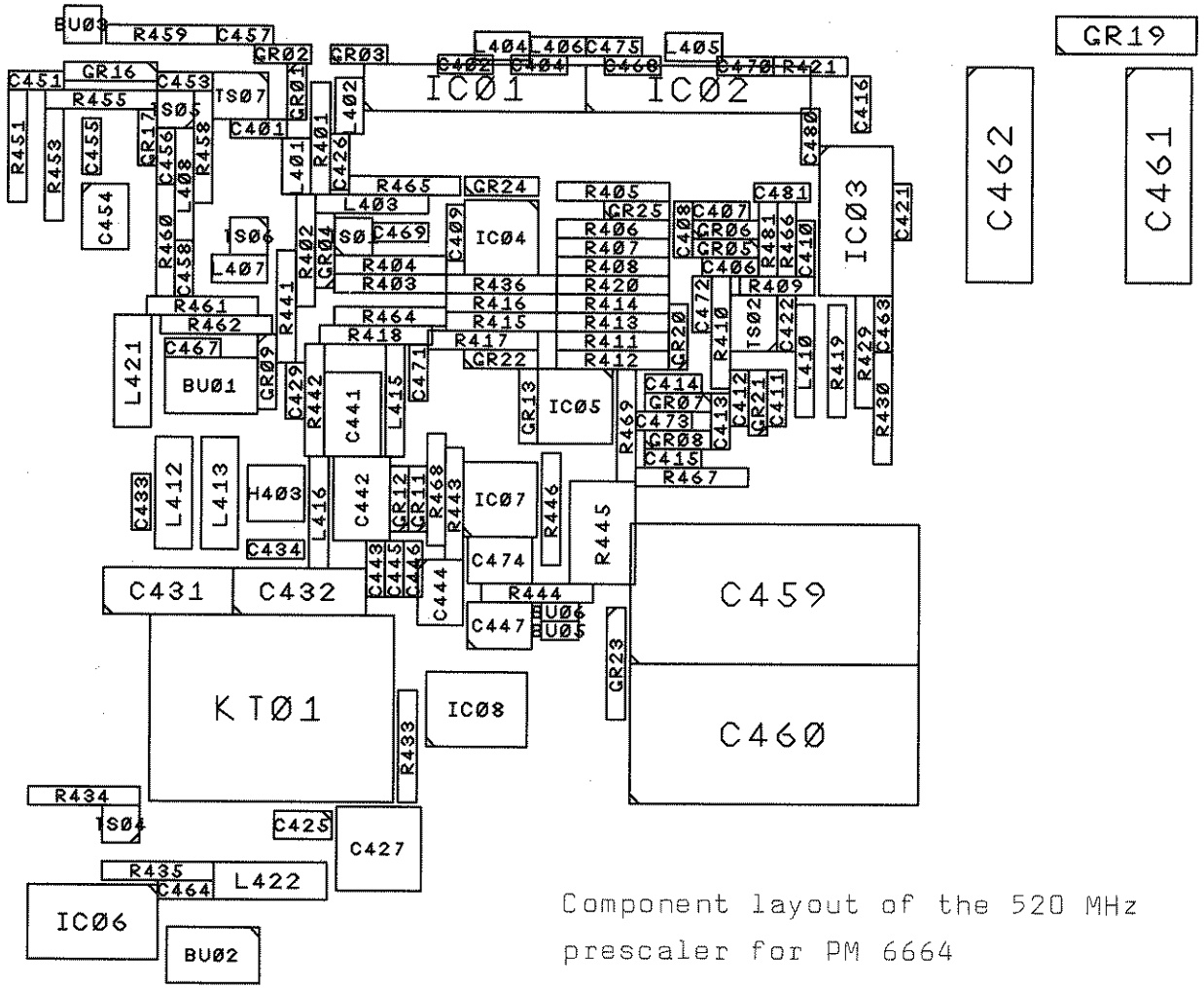
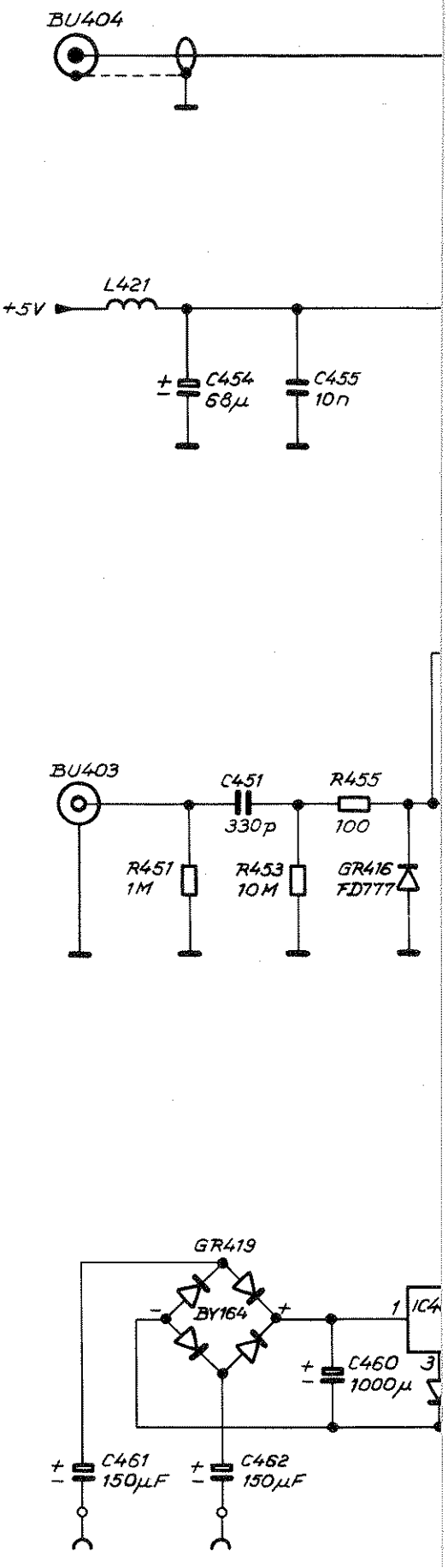
TEST AND MEASURING

New design of the prescaler unit for PM 6664

The new layout is showed at the bottom of this page and the circuit diagram on the next pages.




Component layout of the 520 MHz prescaler for PM 6664


BU404
L421
+5V
C454
68µ
C455
10n
BU403
C451
330p
R455
100
R451
1M
R453
10M
GR416
FD777
GR419
BY164
1
IC4
C460
1000µ
3
C461
150µF
C462
150µF

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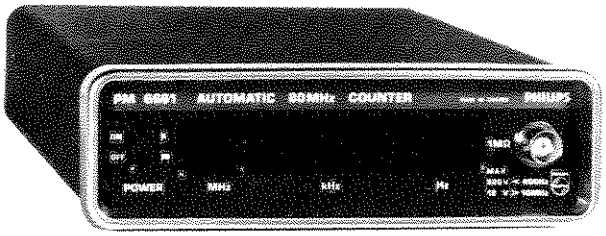
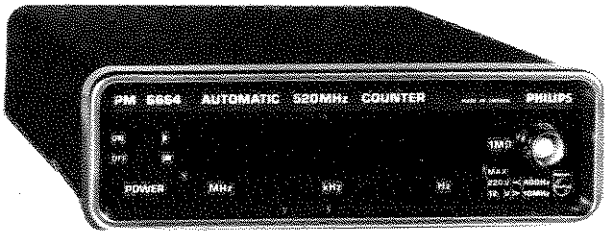



# PM 6661

9446 066 610.1

# Operating Manual




# PM 6664

9446 066 640.1

Ordering number of this manual 9499 460 08811

# 1. Introduction

The PM 6661 and PM 6664 are 8 digits frequency counters with automatic triggering and input attenuation.
The sensitivity is 20 $mV_{rms}$ and the frequency range is 10 Hz to 80 Hz for the PM 6661 and 10 Hz to 520 MHz for the PM 6664.
The design of the instruments is subject to continuous development and improvement. Consequently, the instruments may incorporate minor changes in detail from the information contained in this manual.

# 2. Technical data

This instrument has been designed and tested in accordance with IEC Publication 348 for Class I instruments and has been supplied in a safe condition.
The present Operating Manual contains information and warnings which shall be followed by the purchaser to ensure safe operation and to retain the instrument in a safe condition.
Properties expressed in numerical values with statement of tolerances are guaranteed. Numerical values without tolerances are intended for information purposes only and indicate the properties of an average instrument.
The numerical values hold good for the nominal mains voltage.

## 2.1. Measurement

| | |
|---|---|
| Frequency range | |
| PM 6661 | 10 Hz . . . 80 MHz |
| PM 6664 | 10 Hz . . . 520 MHz |
| Gate time | 1 s |
| Resolution | |
| 10 Hz . . . 80 MHz | 1 Hz |
| 80 MHz . . . 520 MHz, PM 6664 | 10 Hz |
| Prescaler switch-over PM 6664 | Switches on at $\approx$ 80 MHz and off at $\approx$ 60 MHz |
| Input sensitivity | |
| PM 6661 | 20 $mV_{rms}$ (50 Hz* . . . 70 MHz, 3 dB down at 80 MHz) |
| PM 6664 | 20 $mV_{rms}$(50 Hz* . . . 520 MHz) |
| Input attenuation | Automatically between X1 . . . X50 |
| Input impedance | 1 M$\Omega$//approx. 18 pF |
| Coupling | AC |
| AM tolerance | |
| PM 6664 | 98 % at frequencies 80 . . . 520 MHz and f mod $\leq$ 5 kHz |
| PM 6661 and PM 6664 | 30 % in all other cases |
| Accuracy | $\pm$ 1 digit $\pm$ time base error |
| Maximum input voltage without damage | 300 V DC or 260 $V_{rms}$ at frequencies $\leq$ 440 Hz decreasing to 12 $V_{rms}$ at frequencies $\geq$ 1 MHz |

* Below 50 Hz the sensitivity drop with 6 dB/octave

### 2.2. General characteristics

| | |
|---|---|
| Time base oscillating frequency | |
| PM 6661 | $2^{22}$ Hz |
| PM 6664 | $2^{23}$ Hz |
| Ageing | |
| PM 6661 | $< 2 \times 10^{-6}$/year |
| PM 6664 | $< 1 \times 10^{-7}$/month |
| Temperature stability | 0 . . . 50 °C with reference to + 25 °C |
| PM 6661 | $< 1.5 \times 10^{-5}$ |
| PM 6664 | $< 1 \times 10^{-6}$ |
| Power requirements | 115 V or 230 V + 10 % and — 15 %, 50 Hz . . . 400 Hz, 15 VA |
| Mains interference | Below CISPR: 22/3, 29/1 and 40/1 |
| Display | 8 digits, 7.6 mm LED with grouped presentation of MHz, kHz and Hz. Leading zero blanking. |

### 2.3. Environmental characteristics

The environmental data are valid only if the instrument is checked in accordance with the official checking procedures. Details on these procedures and failure criteria are supplied on request by the PHILIPS Organization in your country, or by N. V. PHILIPS GLOEILAMPENFABRIEKEN, TEST AND MEASURING DEPARTMENT, EINDHOVEN HOLLAND.

| | |
|---|---|
| Temperature | |
| Storage | — 40 °C . . . + 70 °C |
| Operating | 0 °C . . . + 45 °C |
| Altitude | |
| Storage | 15.000 m (15.2 kN/m²) |
| Operating | 5.000 m (53.3 kN/m²) |
| Humidity | 10 % . . . 90 % RH (26 °C dew point) |
| Mechanical | |
| Vibration | according to IEC 68 Fc |
| Bump | according to IEC 68 Eb |
| Handling | according to IEC 68 Ec |
| Transport | according to NLN-L88 |
| Dimensions | |
| Width | 145 mm |
| Height | 45 mm |
| Depth | 220 mm |
| Weight PM 6661 | 1400 g |
| Weight PM 6664 | 1500 g |

## 3. Performance check

### 3.1. Check PM 6661/PM 6664

— Connect the signal from TP9 to the input socket via a 10 MΩ/11 pF oscilloscope probe.
— Check that display read out is 4.194304 MHz ± 1 Hz.

### 3.2. Frequency PM 6661/PM 6664

— Connect a 50 Hz/20 $mV_{rms}$ sine wave signal to the input socket.
— Check that display read out is 50 ± 1 Hz.

### 3.3. Frequency PM 6661

— Connect a 80 MHz/20 $mV_{rms}$ sine wave signal to the input socket.
— Check that display read out is correct.
— If necessary adjust R 128.

### 3.4. Frequency PM 6664

— Connect a 520 MHz/20 $mV_{rms}$ sine wave signal to the input socket.
— Check that display read out is correct.

## 4. Power supply

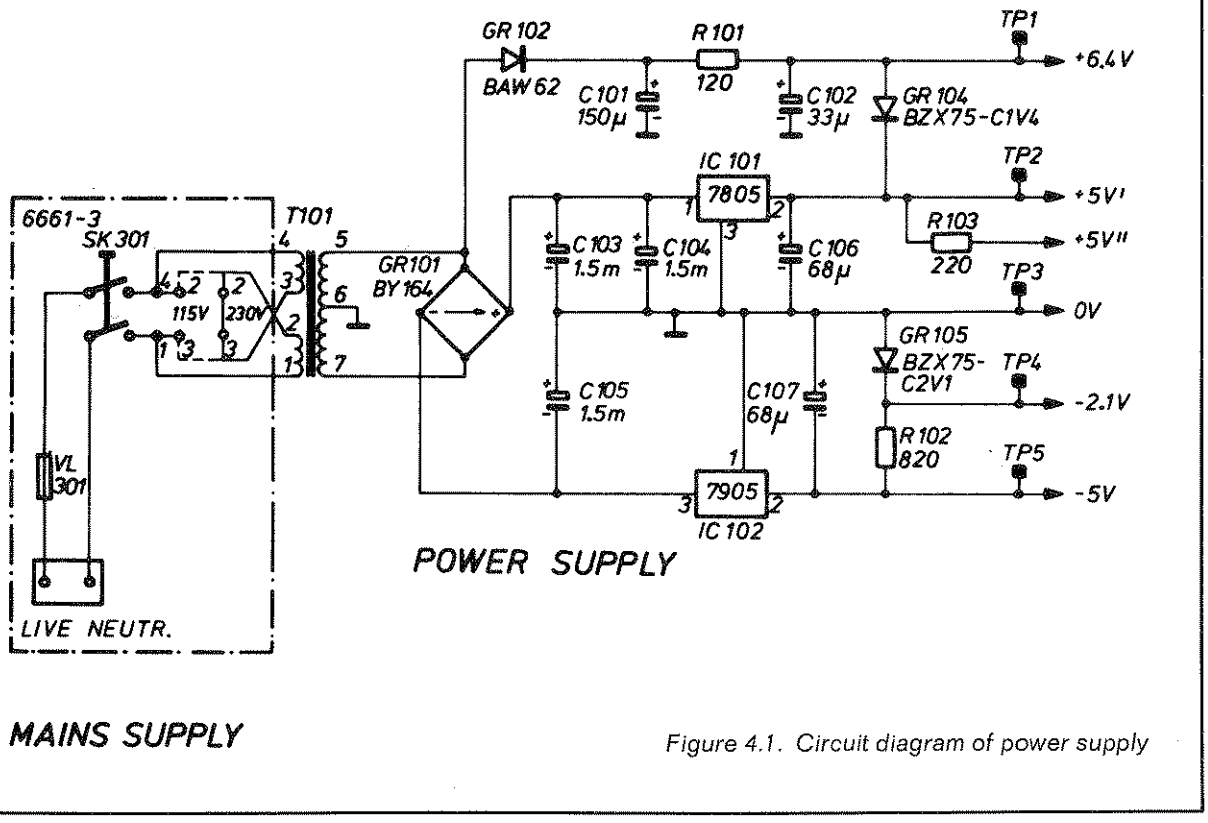



*Figure 4.1. Circuit diagram of power supply*

### 4.1. Mains adjustment and fuse

Before connecting the counter to the mains, check that the mains transformer is wired for the local mains voltage and that the mains fuse has the correct value. The counter can be converted into two mains voltage ranges 115 V + 10 %, — 15 % and 230 V + 10 %, — 15 %.

The frequency range is 50 . . . 400 Hz. When the counter is wired for 115 V (fig. 4.2) the mains fuse should be 115 V/200mA fast action, and when the counter is wired for 230 V (fig. 4.3) the fuse should be 230 V/ 100 mA fast action. Make sure that only fuses with the required rated current and of the specified type are used for replacement. The use of mended fuses and the short-circuiting of the fuse holders shall be avoided. The instrument shall be disconnected from all voltage sources when a fuse is to be replaced or when the instrument is to be adapted to different mains voltage.

Fuse replacement and mains voltage adjustment shall only be performed by a skilled person who is aware of the hazard involved.

### 4.2. Switch on power and earthing

Before switching on, the instrument shall be connected to a protective earth conductor via the three-core mains cable. The mains plug shall only be inserted into a socket outlet provided with a protective earth contact. The protective action shall not be negated by use of an extension cord without protective conductor.

WARNING: Any interruption of the protective conductor inside or outside the instrument, or disconnection of the protecitve earth terminal, might make the instrument dangerous. Intentional interruption is prohibited.

When an instrument is brought from a cold into a warm environment, condensation may cause a hazardous condition. Therefore, make sure that the earthing requirements are strictly adhered to.

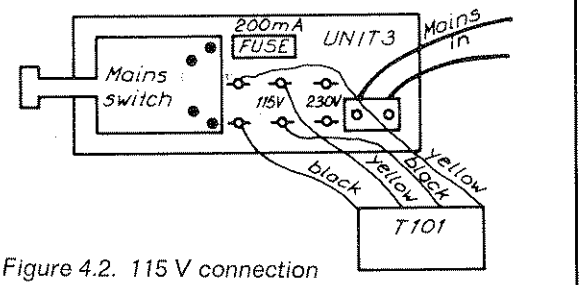



*Figure 4.2. 115 V connection*

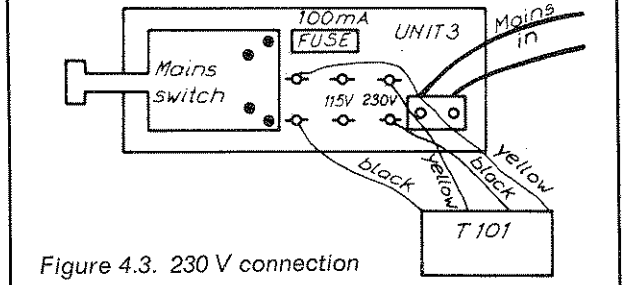



*Figure 4.3. 230 V connection*

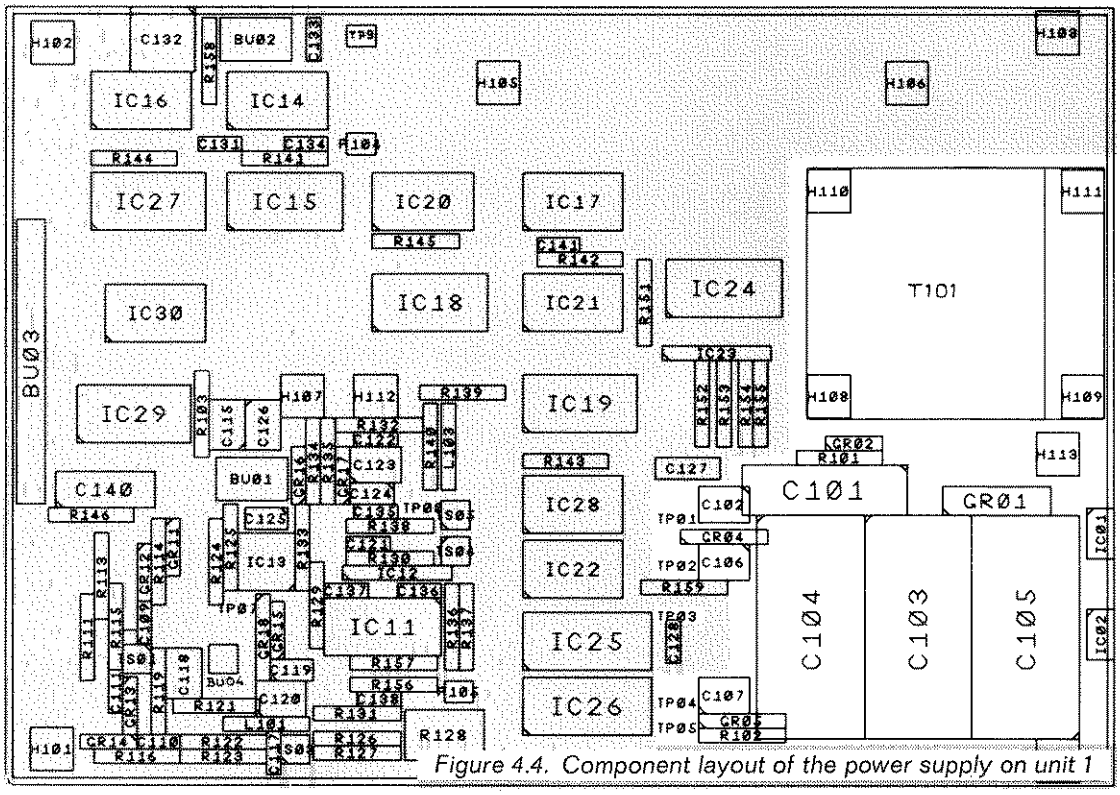



*Figure 4.4. Component layout of the power supply on unit 1*

### 4.3. Dismantling the counter

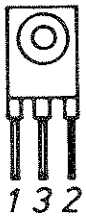
The opening of covers or removal of parts, except those to which access can be gained by hand, is likely to expose live parts and also accessible terminals may be live.
The instrument shall be disconnected from the mains before any adjustment, replacement or maintenance and repair during which the instrument will be opened.
If afterwards any adjustment, maintenance or repair of the opened instrument under voltage is inevitable, it shall be carried out only by a skilled person who is aware of the danger involved.
Replacing the mains plug is at the user's own risk.
After replacing a mains plug, a high-voltage test in accordance with IEC Publication 348 is strongly recommended. Bear in mind that capacitors inside the instrument may still be charged, even if the instrument has been separated from the mains.

### 4.4. Test conditions

The d.c. voltages in the circuit diagram are typical and vary between instruments.
The voltages are measured without input signal and related to earth.
The test instrument shall have an input impedance of at least 40 kΩ/V.

### 4.5. Test points

| *Test point* | *Nominal voltage (v)* | *Measured voltage (v)* | *Ripple $mV_{p-p}$* |
|---|---|---|---|
| TP1 | + 6.4 | + 6.2 . . . 6.6 | 50 |
| TP2 | + 5 | + 4.75 . . . 5.25 | 5 |
| TP3 | 0 | 0 | |
| TP4 | — 2.1 | — 1.9 . . . — 2.3 | 5 |
| TP5 | — 5 | — 4.8 . . . — 5.2 | 2 |




*IC 101 (7805)*
*IC 102 (7905)*

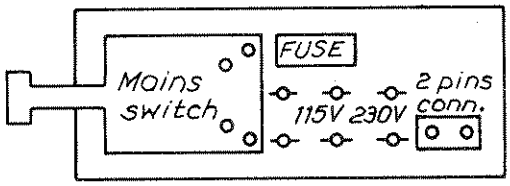



*Figure 4.5. Component layout of the power supply on unit 3*

# 5. Input amplifier

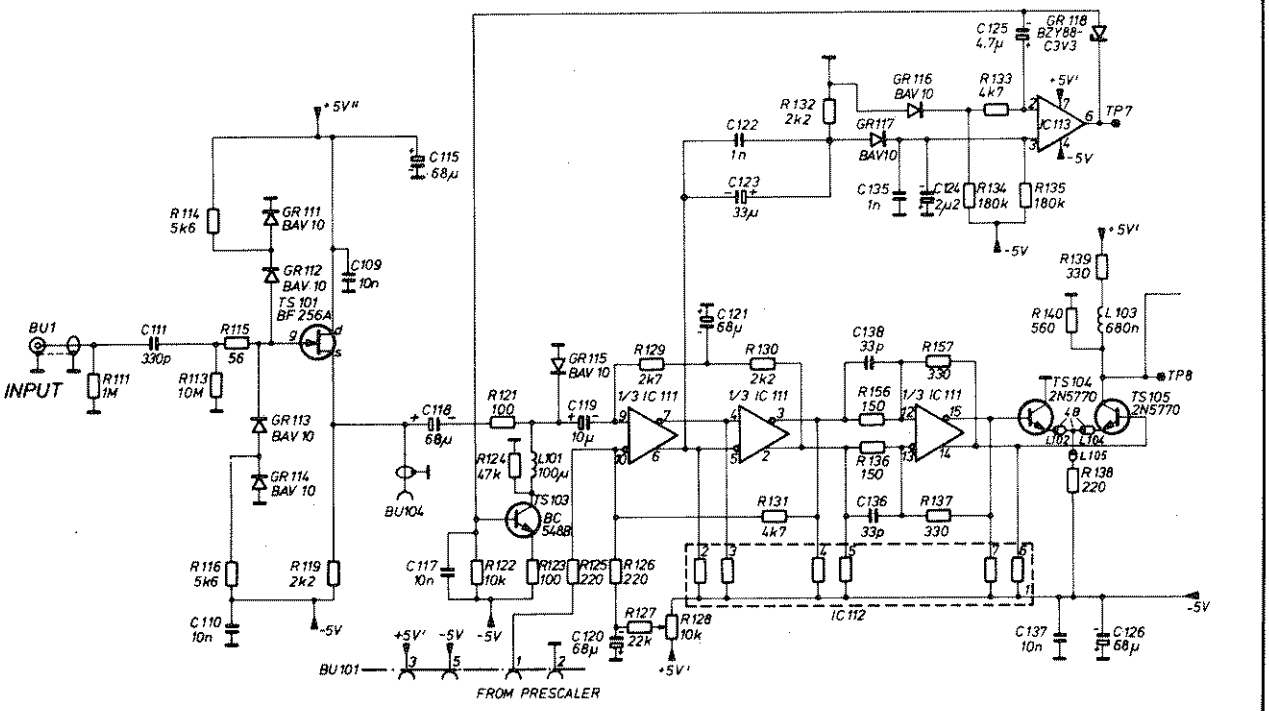



*Figure 5.1. Circuit diagram of the input amplifier*

### 5.1. Test conditions

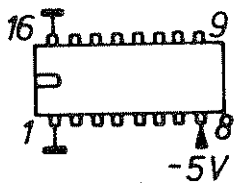
All d.c. voltages were measured without input signal with a voltmeter with an input resistance of 1 MΩ.
Unless otherwise stated pulses were measured with input signal from TP9 connected to the input of the counter via a 10 MΩ/11 pF oscilloscope probe.
All voltages are typical and vary between instruments.

### 5.2. D.C. balance adjustment

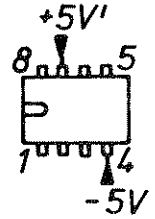
- Connect a voltmeter between terminals 2 and 3 of IC 111 and adjust R 128 to 0 V ± 50 mV.
- Disconnect the voltmeter and connect a 80 MHz/15—20 $mV_{rms}$ sine wave signal to the counter.
- Observe the display and readjust R 128 slightly to highest possible frequency read out.

### 5.3. AGC check

- Connect a 1 kHz/5 mV sine wave signal to the counter.
- Connect a voltmeter to TP7 and read —2 to —3 V.
- Observe the display and slowly increase the input voltage until display read out becomes correct and stable. Note the voltage value (U1).
- Observe the voltmeter and slowly increase the input voltage until the d.c. voltage at TP7 goes positive. Note the voltage value (U2).
  The ratio U2/U1 shall be between 2. . .3.
- Repeat the procedure at 50 to 80 MHz with the same result.




IC 111 (MC 10216P)




IC 113 (SN 72741P)

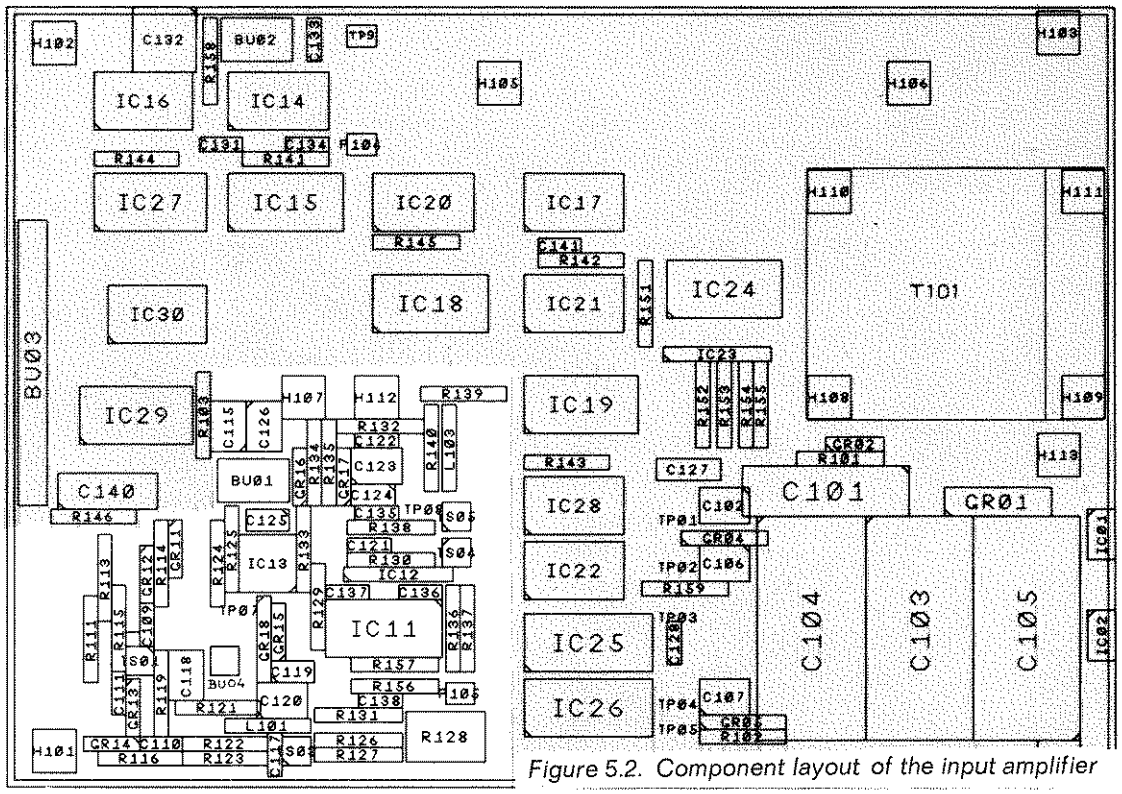



Figure 5.2. Component layout of the input amplifier

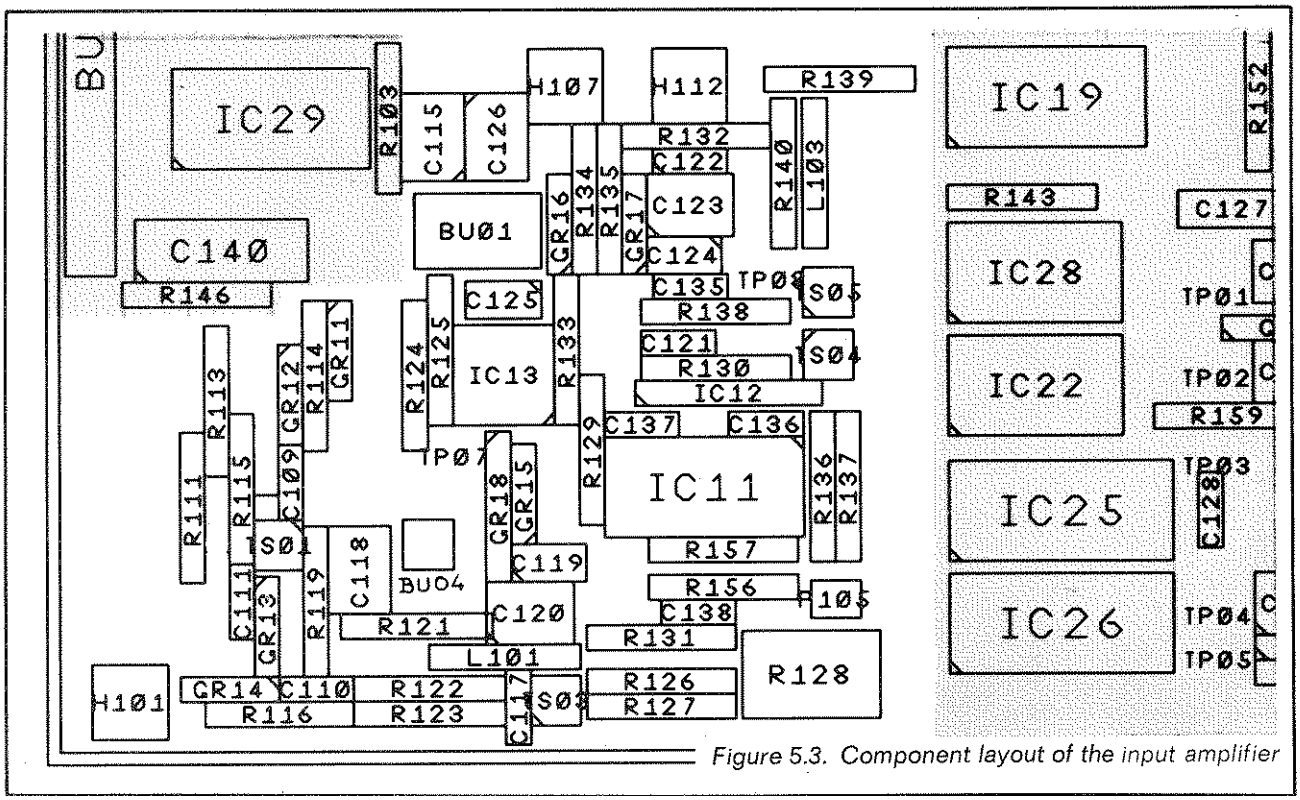



Figure 5.3. Component layout of the input amplifier

# 6. Oscillator and time base divider

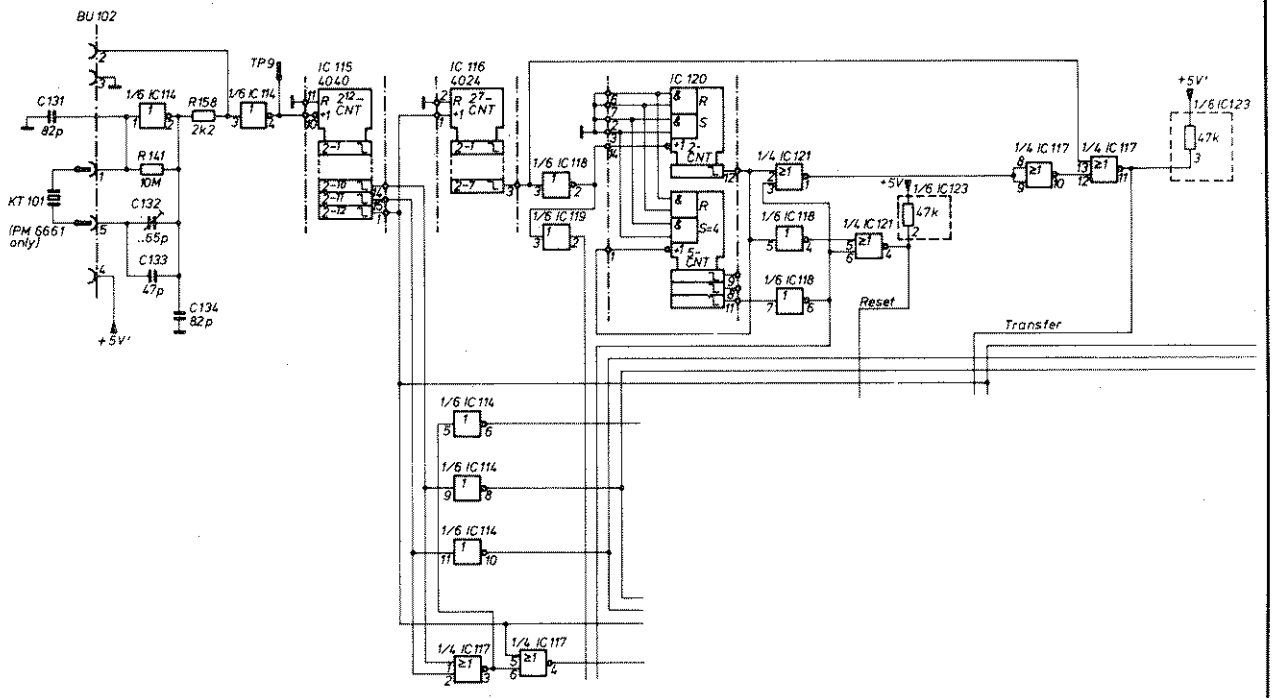



*Figure 6.1. Circuit diagram of the oscillator and the time base divider*

### 6.1. Adjustment of oscillator for PM 6661

— Connect a counter with an accuracy better than $10^{-6}$ to TP9.
— Adjust C 132 until the counter reads 4.194304 MHz ± 2 Hz.

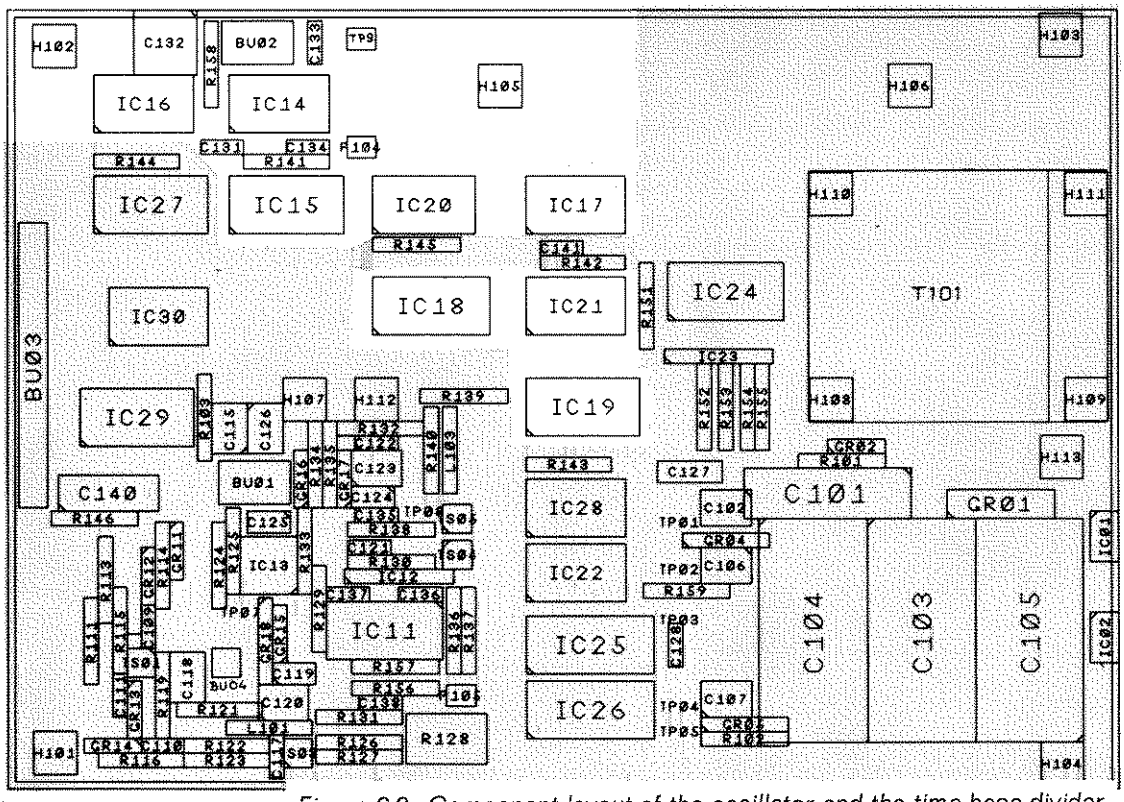
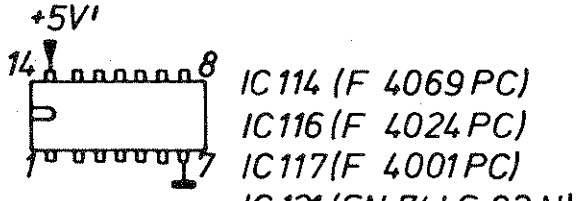
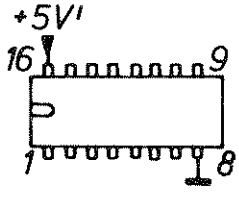


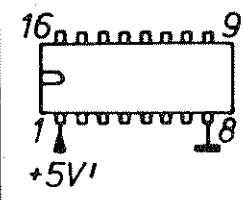

*Figure 6.2. Component layout of the oscillator and the time base divider*



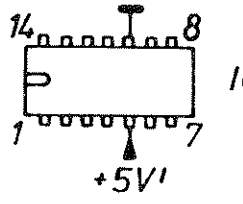

IC 114 (F 4069 PC)
IC 116 (F 4024 PC)
IC 117 (F 4001 PC)
IC 121 (SN 74 LS 02 N)




IC 115 (F 4040 PC)




IC 118 (F 4049 PC)
IC 119 (F 4050 PC)




IC 120 ( SN74LS90N )

# 7. Decimal counting unit

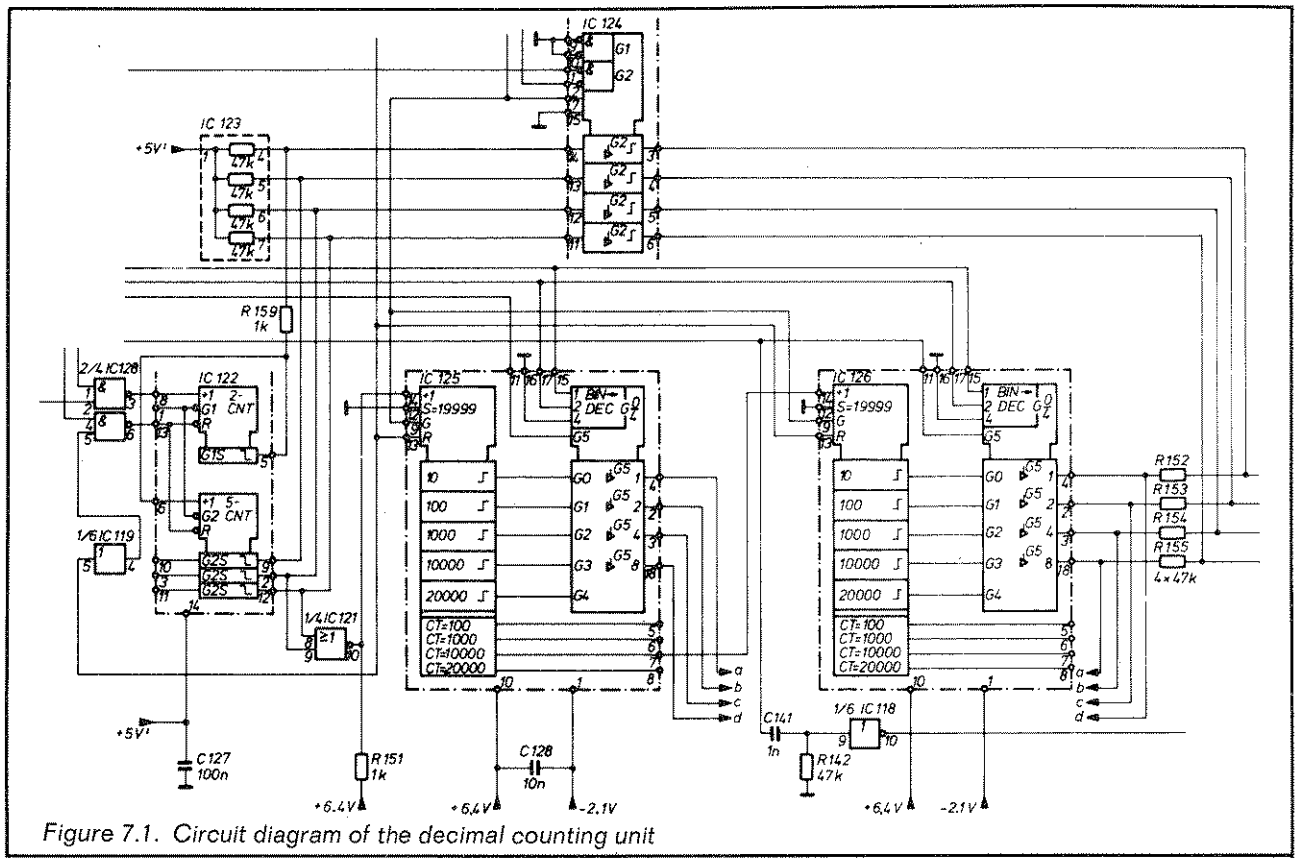



*Figure 7.1. Circuit diagram of the decimal counting unit*

## 7.1. Test conditions

The timing diagram was measured without input signal with a two channels oscilloscope triggered on the main gate signal at IC 118:6.

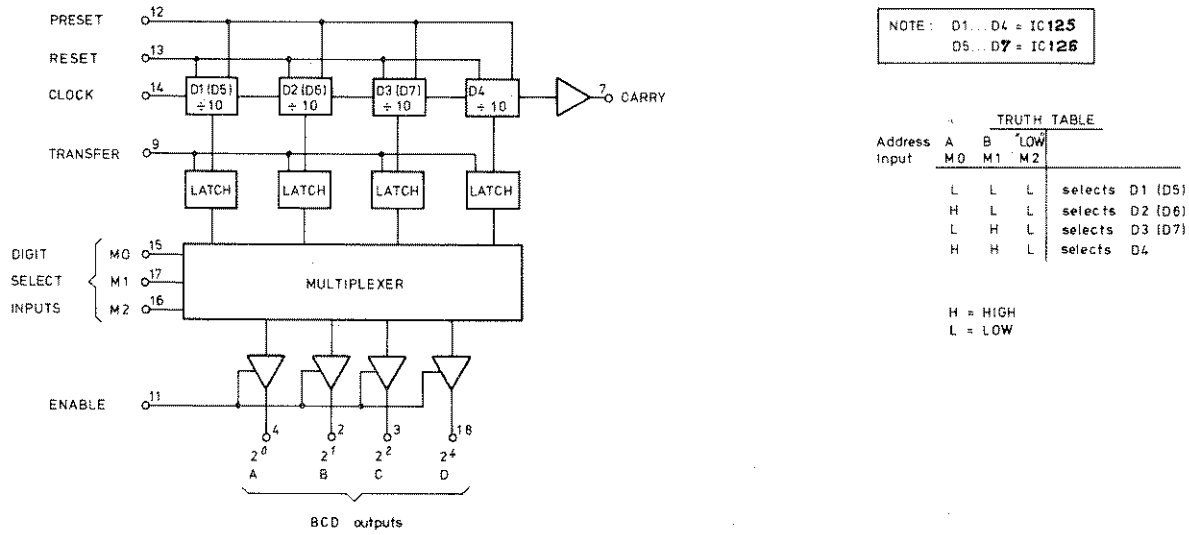



*Figure 7.2. Block diagram of LOCMOS quad decade*

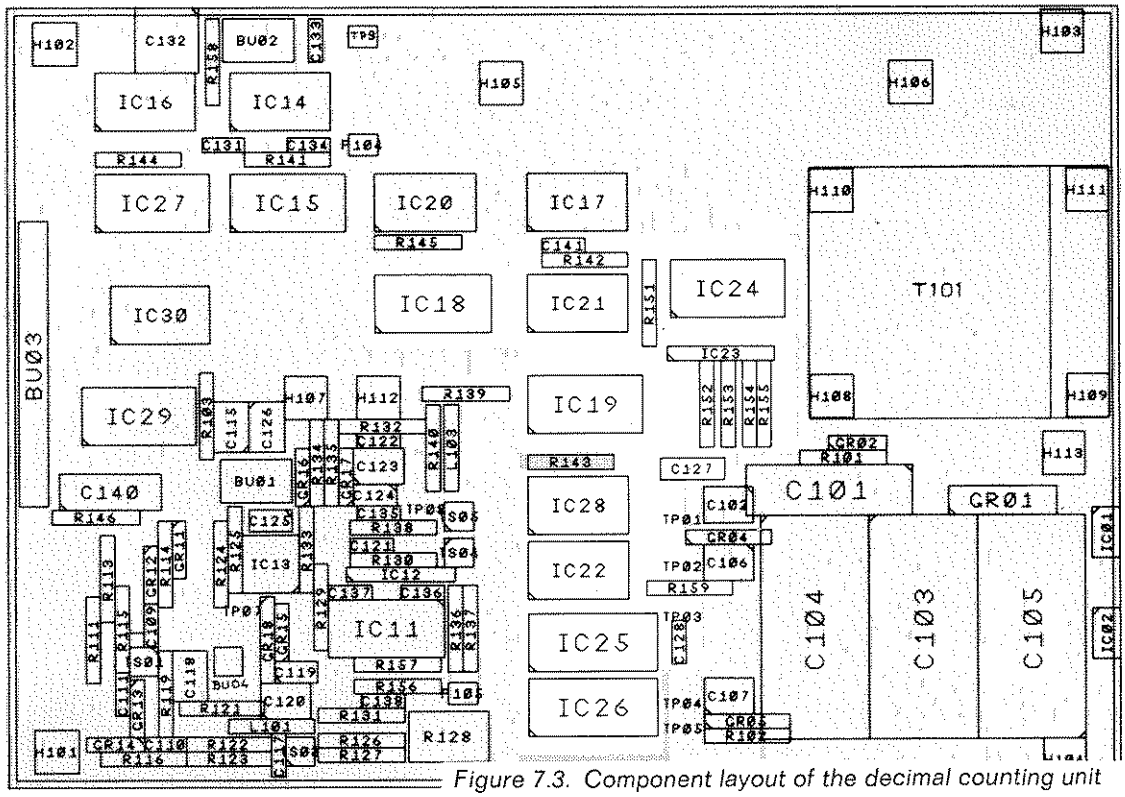
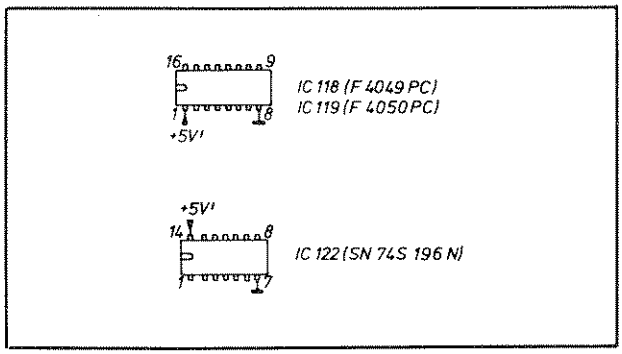
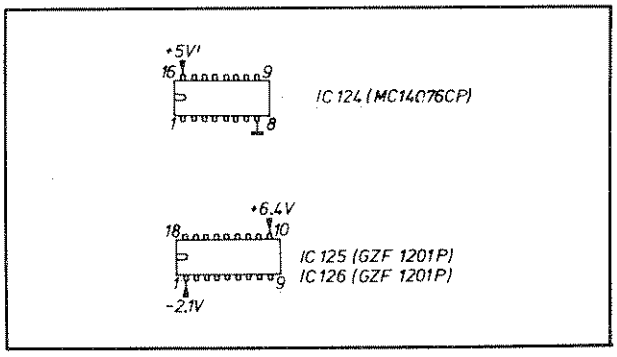



Figure 7.3. Component layout of the decimal counting unit



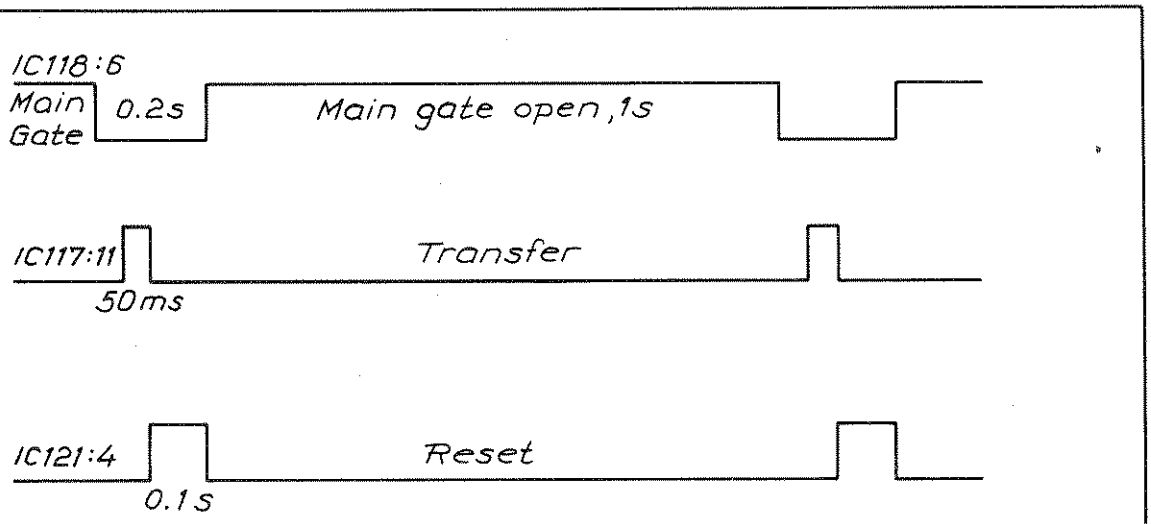




Figure 7.4. Timing diagram for the decimal counting unit

# 8. Display and drivers

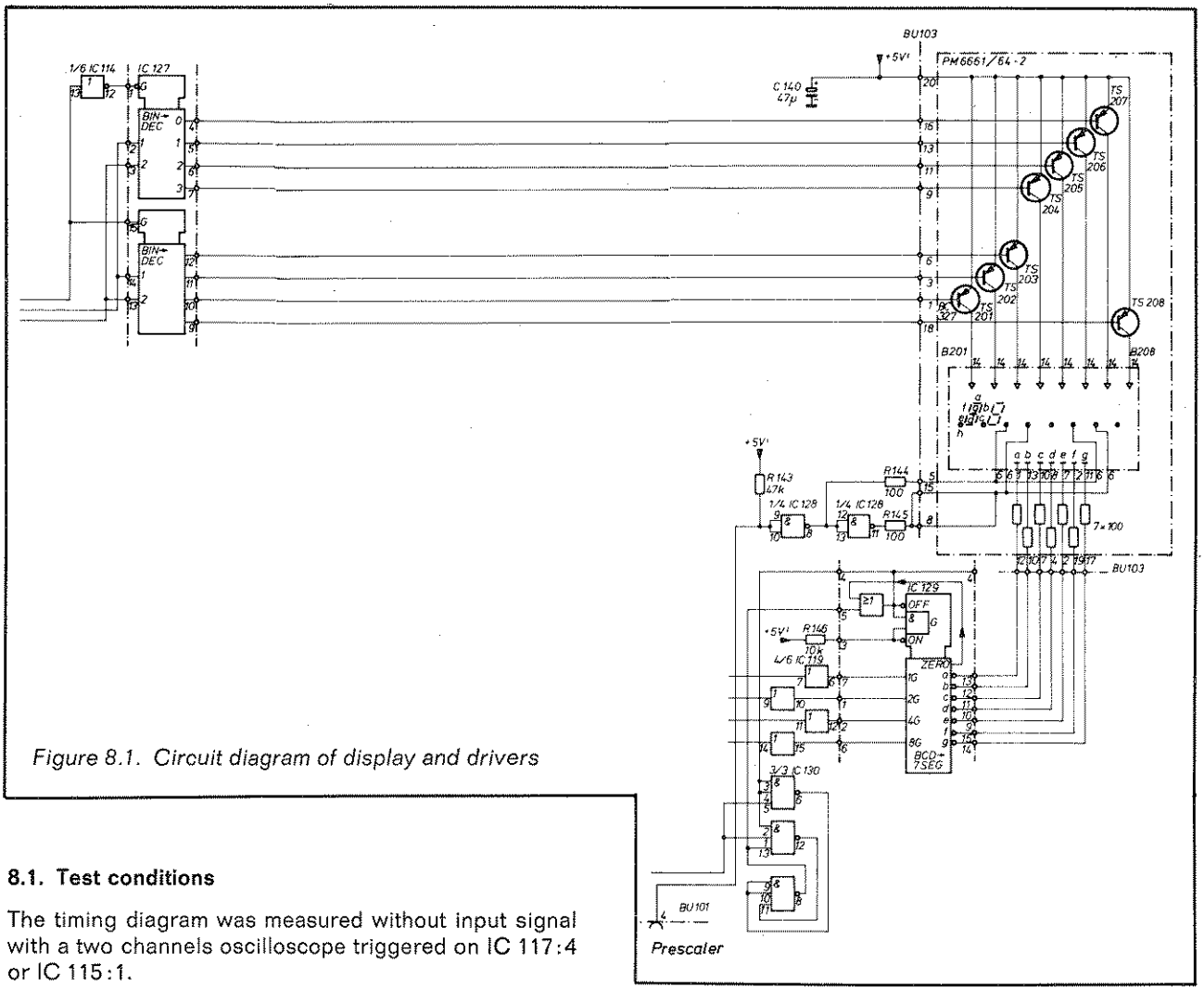



*Figure 8.1. Circuit diagram of display and drivers*

## 8.1. Test conditions

The timing diagram was measured without input signal with a two channels oscilloscope triggered on IC 117:4 or IC 115:1.

| Display value MHz kHz Hz | Possible source of error |
|---|---|
| 76.543.218 | O.K. |
| ■■■43.218 | IC126 |
| 76.5■■■■8 | IC125 |
| 76.543.21■ | IC124 |
| 76.543218 | IC128 |
| 7■543.218 | TS207 |
| 76.5■3.218 | TS205 |
| ■■■■■■■8 | IC126 or IC121 |
| ■■■■■■■■ | IC119-122-129 or input ampl. |
| 76.543.218 | IC129, R201 |

■ = no read out

*Display with wrong indication*

| Display digit | Terminal number IC129 6 | 2 | 1 | 7 | 13 a | 12 b | 11 c | 10 d | 9 e | 15 f | 14 g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | L | L | L | L | L | L | - |
| 1 | 0 | 0 | 0 | 1 | - | L | L | - | - | - | - |
| 2 | 0 | 0 | 1 | 0 | L | L | - | L | L | - | L |
| 3 | 0 | 0 | 1 | 1 | L | L | L | L | - | - | L |
| 4 | 0 | 1 | 0 | 0 | - | L | L | - | - | L | L |
| 5 | 0 | 1 | 0 | 1 | L | - | L | L | - | L | L |
| 6 | 0 | 1 | 1 | 0 | L | - | L | L | L | L | L |
| 7 | 0 | 1 | 1 | 1 | L | L | L | - | - | - | - |
| 8 | 1 | 0 | 0 | 0 | L | L | L | L | L | L | L |
| 9 | 1 | 0 | 0 | 1 | L | L | L | L | - | L | L |

0 = Low < 0.4V
1 = High > 2.5V
L = Low conducting ≈0.4V
- = Non conducting ≈1.5V

*Truth table IC 129*

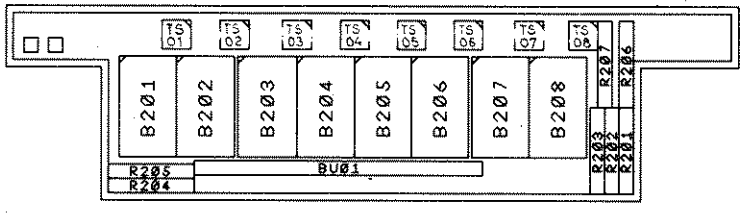



*Figure 8.3. Component layout of the display and drivers on unit 2*

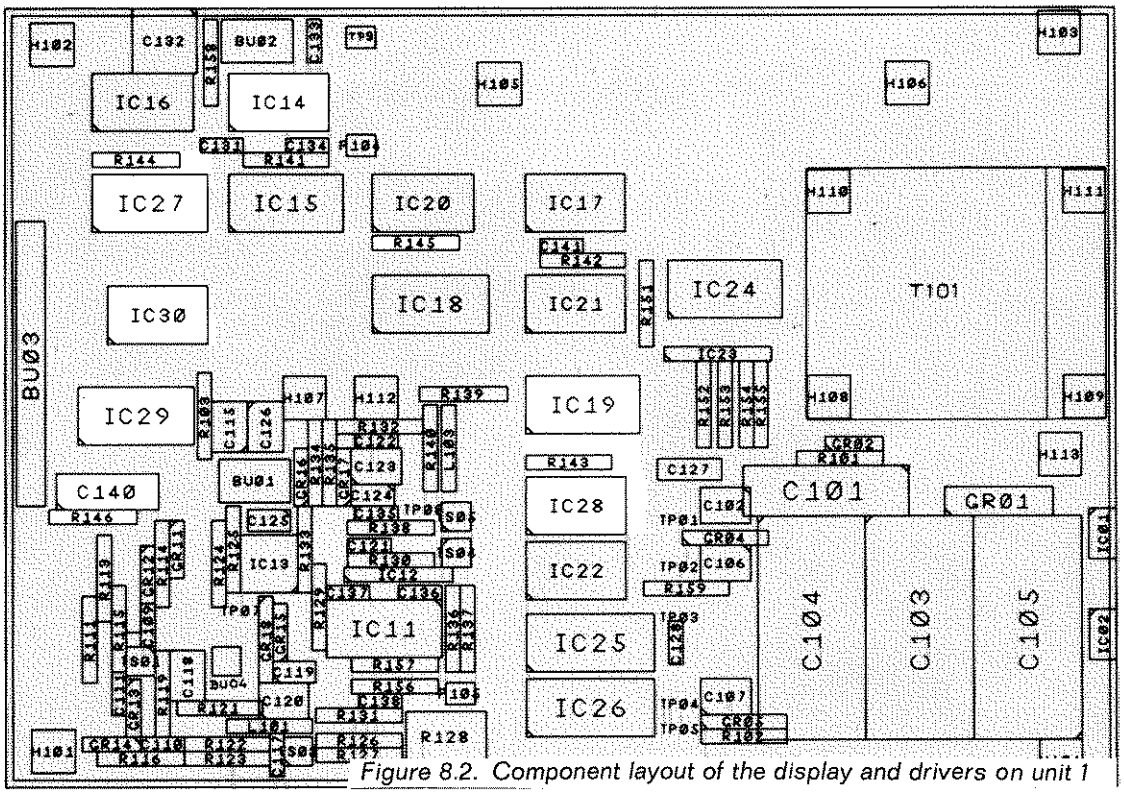
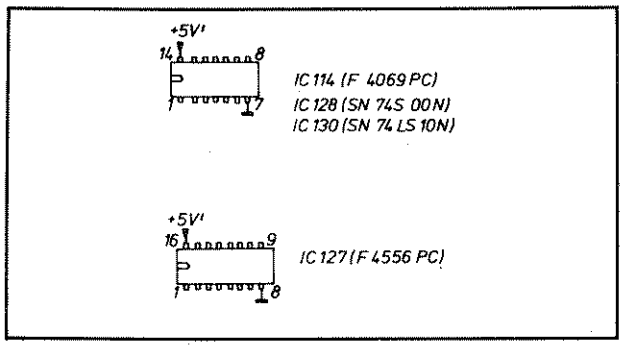
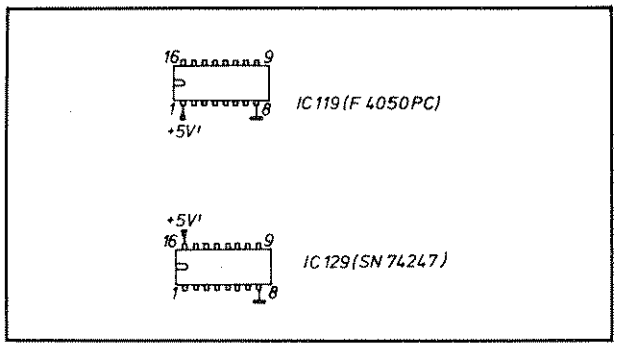



Figure 8.2. Component layout of the display and drivers on unit 1



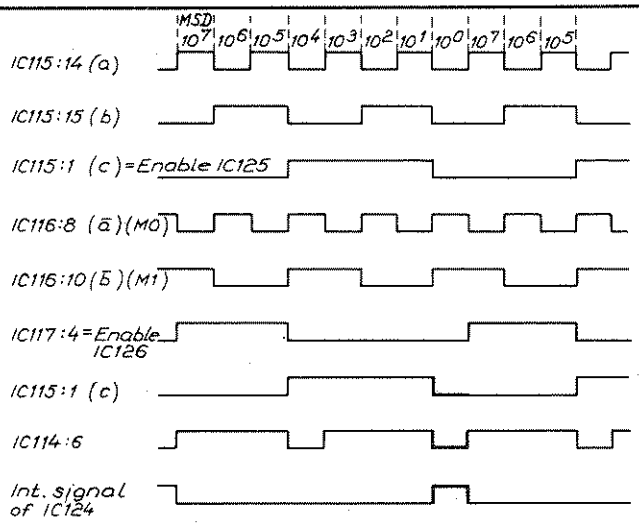




Figure 8.4. Timing diagram for scanning of display and decimal counting unit

# 9. 520 MHz prescaler unit for PM 6664

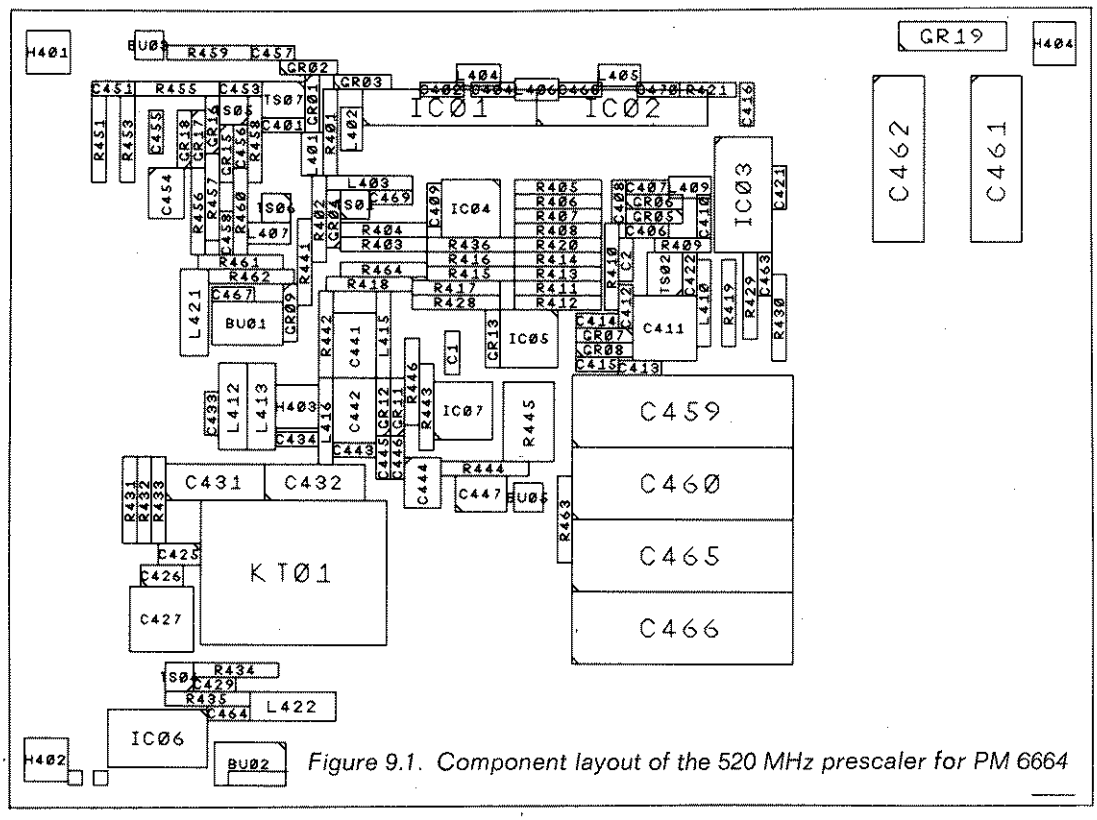



*Figure 9.1. Component layout of the 520 MHz prescaler for PM 6664*

## 9.1. Adjustment of the TCXO for PM 6664

- This adjustment requires a reference oscillator having an accuracy of $10^{-7}$ or better. The oven enclosed PHILIPS oscillators PM 9680, PM 9681 and PM 9690 meet this requirement.
  The adjustment should preferably be made at an ambient temperature of + 25°C.
- Remove the cover of the counter.
- Connect the reference signal to the input socket of PM 6664.
- Adjust trimming capacitor C 427 until the display of the PM 6664 shows the frequency of the reference oscillator (10 MHz ± 1 Hz).

## 9.2. D.C. level adjustment

- Remove jumper connector BU 405.
- Connect the plus terminal of a voltmeter to IC 407:3 and the minus terminal to IC 407:2.
- Adjust R 445 to — 10 mV.
- Remove the voltmeter and connect the positive terminal of a 500 MHz oscilloscope with differential input to IC 407:3 and the minus terminal to IC 407:2.
- Connect a sweep generator set to 0. . .500 MHz and 100 mV to the input.
- Adjust C 441 and C 442 until the oscilloscope displays a signal with a waveform similar to figure 9.2.
- Replace the jumper connector BU 405.

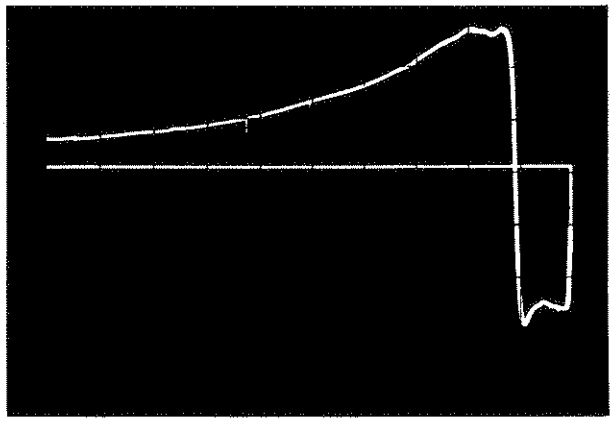
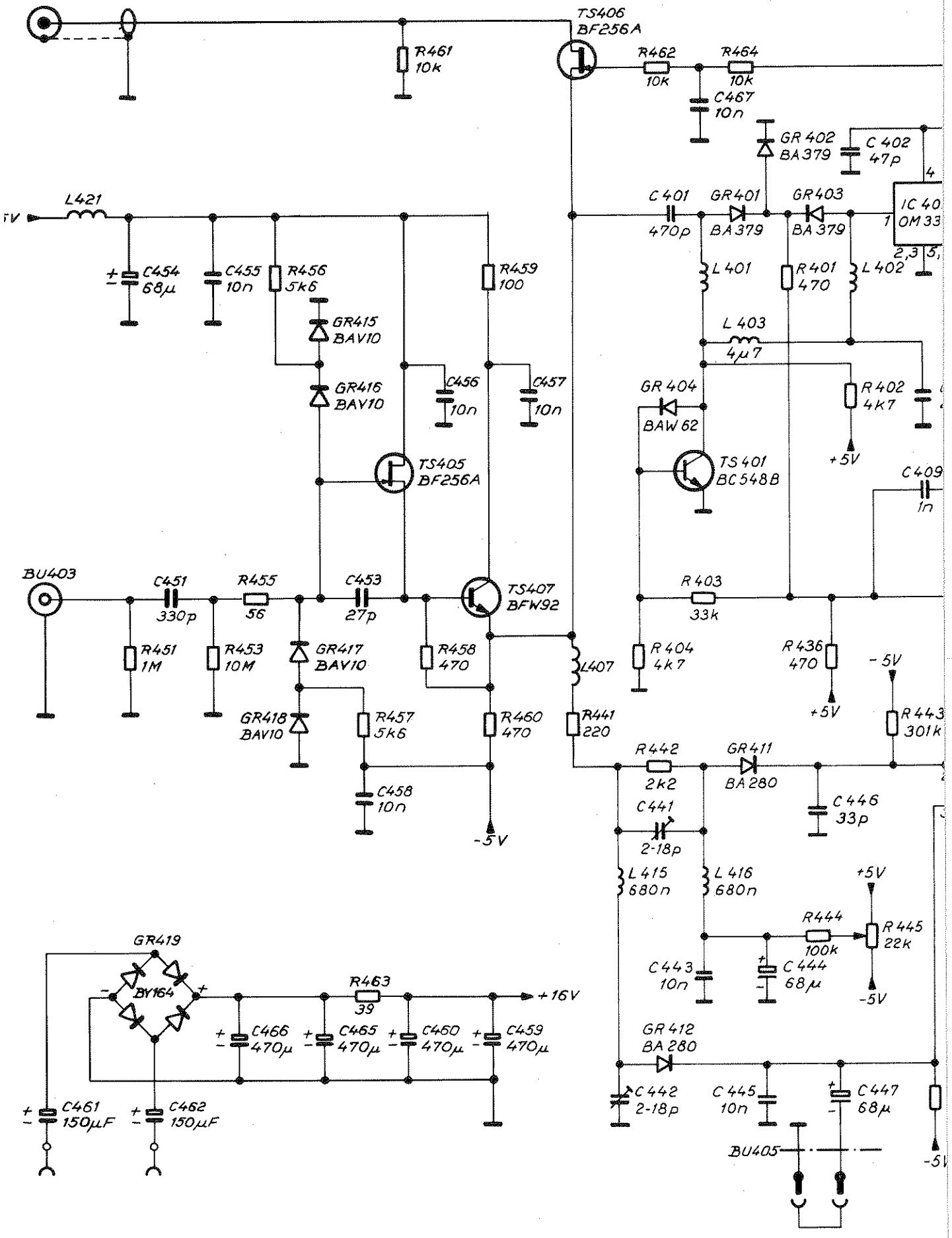


*Figure 9.2. D.C. level adjustment*


TS406
BF256A
R461
10k
R462
10k
R464
10k
C467
10n
GR402
BA379
C402
47p
L421
TV
C401
470p
GR401
BA379
GR403
BA379
IC 40
OM33
C454
68µ
C455
10n
R456
5k6
R459
100
GR415
BAV10
GR416
BAV10
C456
10n
C457
10n
L401
R401
470
L402
L403
4µ7
GR404
BAW62
R402
4k7
+5V
TS405
BF256A
TS401
BC548B
C409
1n
BU403
C451
330p
R455
56
C453
27p
TS407
BFW92
R403
33k
R451
1M
R453
10M
GR417
BAV10
R458
470
L407
R404
4k7
R436
470
+5V
-5V
GR418
BAV10
R457
5k6
R460
470
R441
220
R443
301k
C458
10n
-5V
R442
2k2
GR411
BA280
C446
33p
C441
2-18p
L415
680n
L416
680n
+5V
R444
100k
R445
22k
C443
10n
C444
68µ
-5V
GR419
BY164
R463
39
+16V
C466
470µ
C465
470µ
C460
470µ
C459
470µ
GR412
BA280
C461
150µF
C462
150µF
C442
2-18p
C445
10n
C447
68µ
BU405
-5V

# 10. Spare parts

## 10.1. Spare parts unit 1, 2 and 3

UNIT U1 PM6661-64
FIXED RESISTORS

| Ordering no. | | Ohm | Tol.(%) | Type | Item | Qty. |
|---|---|---|---|---|---|---|
| 4822 110 63063 | M | 120 | 5 | CR25 | R101 | 1 |
| 4822 110 63105 | M | 820 | 5 | CR25 | R102 | 1 |
| 4822 110 63054 | M | 10 | 5 | CR25 | R103 | 1 |
| 4822 110 63187 | M | 1M | 5 | CR25 | R111 | 1 |
| 4822 110 63178 | M | 470K | 5 | CR25 | R112 | 1 |
| 4822 110 63214 | M | 10M | 10 | CR25 | R113 | 1 |
| 4822 110 63127 | M | 5.6K | 5 | CR25 | R114 | 1 |
| 4822 116 51147 | M | 22 | 5 | PR37 | R115 | 1 |
| 4822 110 63127 | M | 5.6K | 5 | CR25 | R116 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R117 | 1 |
| 4822 110 63081 | M | 100 | 5 | CR25 | R118 | 1 |
| 4822 110 63098 | M | 470 | 5 | CR25 | R119 | 1 |
| 4822 110 63081 | M | 100 | 5 | CR25 | R120 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R121 | 1 |
| 4822 110 63134 | M | 10K | 5 | CR25 | R122 | 1 |
| 4822 110 63081 | M | 100 | 5 | CR25 | R123 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R124 | 1 |
| 4822 110 63089 | M | 220 | 5 | CR25 | R125 | 1 |
| 4822 110 63089 | M | 220 | 5 | CR25 | R126 | 1 |
| 4822 110 63143 | M | 22K | 5 | CR25 | R127 | 1 |
| 4822 110 63118 | M | 2.7K | 5 | CR25 | R129 | 1 |
| 4822 110 63116 | M | 2.2K | 5 | CR25 | R130 | 1 |
| 4822 110 63125 | M | 4.7K | 5 | CR25 | R131 | 1 |
| 4822 110 63136 | M | 12K | 5 | CR25 | R132 | 1 |
| 4822 110 63136 | M | 12K | 5 | CR25 | R133 | 1 |
| 4822 110 63167 | M | 180K | 5 | CR25 | R134 | 1 |
| 4822 110 63167 | M | 180K | 5 | CR25 | R135 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R136 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R137 | 1 |
| 4822 110 63089 | M | 220 | 5 | CR25 | R138 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R139 | 1 |
| 4822 110 63101 | M | 560 | 5 | CR25 | R140 | 1 |
| 4822 110 63214 | M | 10M | 10 | CR25 | R141 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R142 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R143 | 1 |
| 4822 110 63076 | M | 68 | 5 | CR25 | R144 | 1 |
| 4822 110 63076 | M | 68 | 5 | CR25 | R145 | 1 |
| 4822 110 63134 | M | 10K | 5 | CR25 | R146 | 1 |
| 4822 110 63134 | M | 10K | 5 | CR25 | R147 | 1 |
| 4822 110 63178 | M | 470K | 5 | CR25 | R148 | 1 |
| 4822 110 63187 | M | 1M | 5 | CR25 | R149 | 1 |
| 4822 110 63134 | M | 10K | 5 | CR25 | R150 | 1 |
| 4822 110 63107 | M | 1K | 5 | CR25 | R151 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R152 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R153 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R154 | 1 |
| 4822 110 63152 | M | 47K | 5 | CR25 | R155 | 1 |
| 4822 110 63081 | M | 100 | 5 | CR25 | R156 | 1 |
| 4822 110 63094 | M | 330 | 5 | CR25 | R157 | 1 |
| 4822 110 63116 | M | 2.2K | 5 | CR25 | R158 | 1 |

UNIT U1 PM6661-64
VARIABLE RESISTORS

| Ordering no. | Ohm. | Tol.(%) | | Item | Qty. |
|---|---|---|---|---|---|
| 5322 100 10113 | 10K. | 20 | TRIM. | R128 | 1 |

UNIT U1 PM6661-64
FIXED CAPACITORS

| Ordering no. | | Farad | Tol.(%) | Volts | Item | Qty |
|---|---|---|---|---|---|---|
| 4822 124 20586 | M | 150M | -10+50 | 16 | C101 | 1 |
| | | 33M | -10+50 | 10 | C102 | 1 |
| 4822 124 20525 | M | 1500M | -10+50 | 16 | C103 | 1 |
| 4822 124 20525 | M | 1500M | -10+50 | 16 | C104 | 1 |
| 4822 124 20525 | M | 1500M | -10+50 | 16 | C105 | 1 |
| 5322 124 14079 | | 68M | -10+50 | 6.3 | C106 | 1 |
| 5322 124 14079 | | 68M | -10+50 | 6.3 | C107 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C109 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C110 | 1 |
| | | 22N | 10 | 630 | C111 | 1 |
| 4822 122 31173 | M | 220P | 10 | 100 | C112 | 1 |
| 4822 122 30045 | M | 27P | 2 | 100 | C113 | 1 |
| | | 100N | 10 | 100 | C114 | 1 |
| 5322 124 14079 | | 68M | -10+50 | 6.3 | C115 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C116 | 1 |
| 5322 124 24181 | N | 47M | | 16 | C118 | 1 |
| 5322 124 14066 | | 10M | -10+50 | 6.3 | C119 | 1 |
| 5322 124 14079 | | 68M | -10+50 | 6.3 | C120 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C121 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C122 | 1 |
| | | 33M | -10+50 | 10 | C123 | 1 |
| | | 2.2M | -10+50 | 16 | C124 | 1 |
| 5322 124 14075 | | 4.7M | -10+50 | 10 | C125 | 1 |
| 5322 124 14079 | | 68M | -10+50 | 6.3 | C126 | 1 |
| | | 100N | 10 | 100 | C127 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C128 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C129 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C130 | 1 |
| 4822 122 31078 | M | 82P | 2 | 100 | C131 | 1 |
| 4822 122 31072 | M | 47P | 2 | 100 | C133 | 1 |
| 4822 122 31078 | M | 82P | 2 | 100 | C134 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C135 | 1 |
| 4822 122 31067 | M | 33P | 2 | 100 | C136 | 1 |
| 4822 124 20461 | M | 47M | -10+50 | 10 | C140 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C141 | 1 |
| 5322 122 34041 | | 10N | -20+50 | 100 | C142 | 1 |
| | | 100N | 10 | 100 | C143 | 1 |
| | | 100N | 10 | 100 | C144 | 1 |

UNIT U1 PM6661-64
VARIABLE CAPACITORS

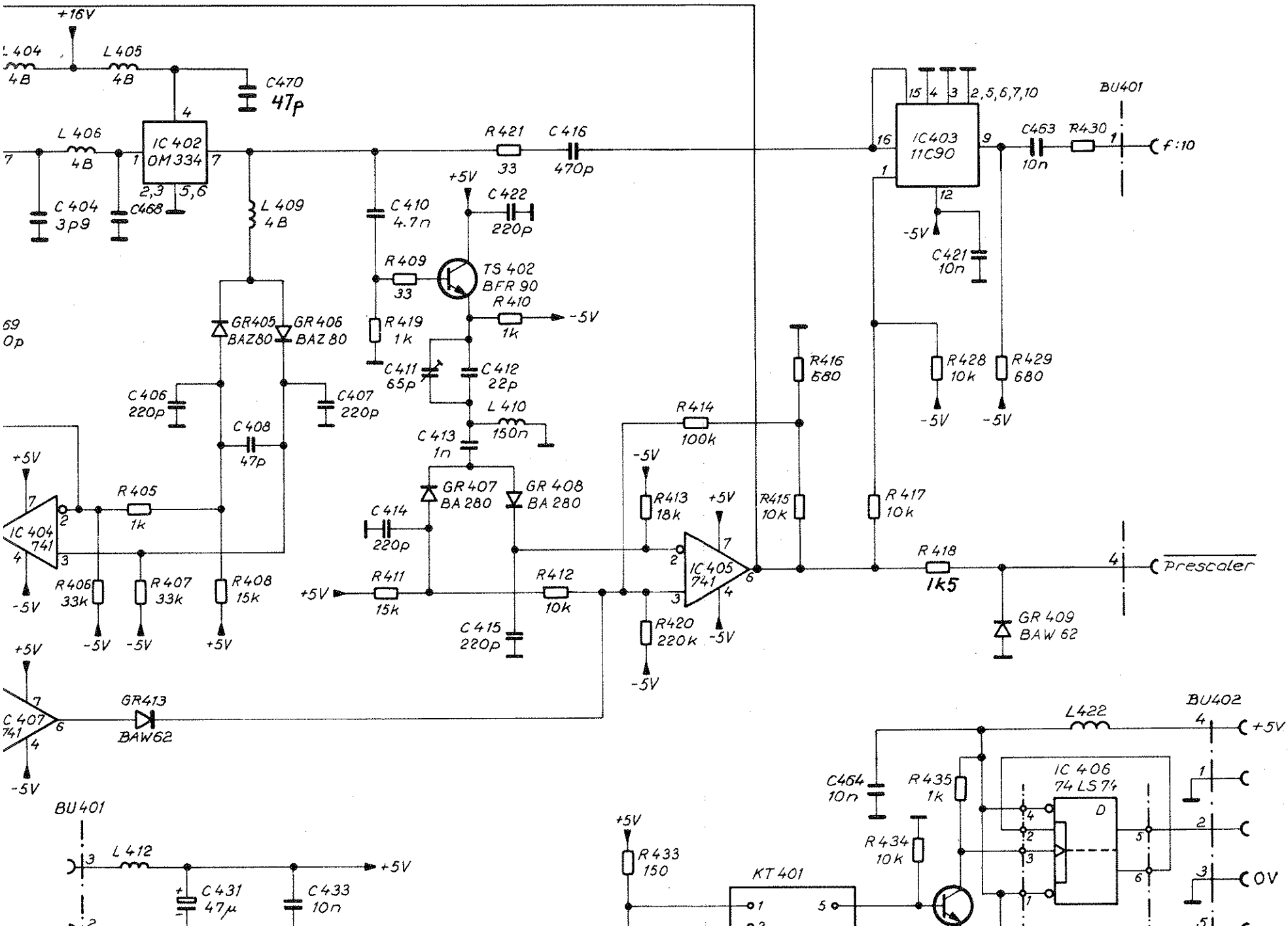
| Ordering no. | Farad | Volts | Item | Qty. |
|---|---|---|---|---|
| 4822 125 50017 M | 5.5-65P. | 100 | C132 | 1 |

UNIT U1 PM6661-64
INTEGRATED CIRCUITS

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 5322 209 84454 | MC7805CP | IC101 | 1 |
| 5322 209 85456 N | MC7905CP | IC102 | 1 |
| 5322 209 84825 | MC10216P | IC111 | 1 |
| 5322 111 94015 | 6X1K | IC112 | 1 |
| 5322 209 84163 | SN72741P | IC113 | 1 |
| 5322 209 14019 N | F34069PC | IC114 | 1 |
| 5322 209 14022 N | F34040PC | IC115 | 1 |
| 5322 209 14024 N | F34024PC | IC116 | 1 |
| 5322 209 84976 | F34001PC | IC117 | 1 |
| 5322 209 14018 N | F34049PC | IC118 | 1 |
| 5322 209 14021 N | F34050PC | IC119 | 1 |
| 5322 209 85255 | SN74LS90N | IC120 | 1 |
| 5322 209 84993 | SN74LS02N | IC121 | 1 |
| 5322 209 85411 | SN74S196N | IC122 | 1 |
| 5322 111 94031 | 6X47K | IC123 | 1 |
| 5322 209 14025 N | MC14076CP | IC124 | 1 |
| 5322 209 84722 | GZF1201P | IC125 | 1 |
| 5322 209 84722 | GZF1201P | IC126 | 1 |
| 5322 209 14023 N | F34556PC | IC127 | 1 |
| 5322 209 84167 | SN74S00N | IC128 | 1 |
| 5322 209 85457 N | SN74247N | IC129 | 1 |
| 5322 209 84996 | SN74LS10N | IC130 | 1 |

UNIT U1 PM6661-64
TRANSISTORS

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 5322 130 44418 | BF256A | TS101 | 1 |
| 5322 130 40745 | BFW92 | TS102 | 1 |
| 4822 130 40937 M | BC548B | TS103 | 1 |
| 5322 130 44435 | 2N5770 | TS104 | 1 |
| 5322 130 44435 | 2N5770 | TS105 | 1 |
| 4822 130 40937 M | BC548B | TS106 | 1 |


+16V
L 404
4B
L 405
4B
C470
47p
4
L 406
4B
IC 402
OM 334
1
7
2,3
5,6
C 404
3p9
C468
L 409
4B
C 410
4.7n
+5V
C 422
220p
R 409
33
TS 402
BFR 90
R 410
1k
-5V
R 419
1k
C411
65p
C 412
22p
L 410
150n
C 413
1n
GR405
BAZ80
GR406
BAZ 80
C 406
220p
C 407
220p
C 408
47p
R 405
1k
IC 404
741
R406
33k
R 407
33k
R 408
15k
GR 407
BA 280
GR 408
BA 280
C 414
220p
R 411
15k
R 412
10k
C 415
220p
R 414
100k
R413
18k
R420
220k
IC 405
741
R416
680
R415
10k
R 417
10k
R 418
1k5
GR 409
BAW 62
Prescaler
R428
10k
R429
680
IC403
11C90
15
4
3
2,5,6,7,10
16
9
1
12
C463
10n
R430
BU401
f:10
C421
10n
GR413
BAW62
C 407
741
BU401
L 412
C 431
47µ
C 433
10n
BU402
L422
+5V
0V
C464
10n
R435
1k
R 434
10k
R 433
150
KT 401
IC 406
74 LS 74
D

UNIT U1 PM6661-64
DIODES

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 5322 130 30414 | BY164 | GR101 | 1 |
| 5322 130 30613 | BAW62 | GR102 | 1 |
| 5322 130 34047 | BZX75-C1V4 | GR104 | 1 |
| 5322 130 34049 | BZX75-C2V1 | GR105 | 1 |
| 5322 130 30594 | BAV10 | GR111 | 1 |
| 5322 130 30594 | BAV10 | GR112 | 1 |
| 5322 130 30594 | BAV10 | GR113 | 1 |
| 5322 130 30594 | BAV10 | GR114 | 1 |
| 5322 130 30594 | BAV10 | GR115 | 1 |
| 5322 130 30594 | BAV10 | GR116 | 1 |
| 5322 130 30594 | BAV10 | GR117 | 1 |
| 5322 130 30392 | BZY88-C3V3 | GR118 | 1 |
| 5322 130 30613 | BAW62 | GR121 | 1 |

UNIT U1 PM6661-64
INDUCTANCES

| Ordering no. | Description | Item | Qty. |
|---|---|---|---|
| 5322 158 10243 | INDUCTANCE 100MH 20% | L101 | 1 |
| 4822 526 10025 M | FXC BEAD | L102 | 1 |
| 5322 158 10289 | INDUCTANCE 680MH 20% | L103 | 1 |

UNIT U1 PM6661-64
MISCELLANEOUS

| Ordering no. | Description | | Qty. |
|---|---|---|---|
| 5322 265 54006 | CONNECTOR 10P FEMALE | BU101 | 1 |
| 5322 265 54006 | CONNECTOR 5P FEMALE | BU102 | 1 |
| 5322 264 54017 | CONNECTOR 20P MALE | BU103 | 1 |
| 5322 267 10004 | INPUT CONNECTOR BNC | BU104 | 1 |
| 5322 265 54006 | CONNECTOR 10P FEMALE | BU105 | 1 |
| 5322 255 44107 | IC HOLDER 16P DIL | | - |
| 5322 255 44112 | IC HOLDER 18P DIL | | 2 |
| 5322 242 74131 N | X-TAL | KT101 | 1 |
| 5322 146 14125 N | MAINS TRANSFORMER | T101 | 1 |

PM6661-64
CABINET FRONT PANEL

| Ordering no. | Description | Qty. |
|---|---|---|
| 5322 456 14057 N | TEXT PLATE PM6661 | 1 |
| 5322 456 14058 N | TEXT PLATE PM6664 | 1 |
| 5322 459 24066 | WINDOW | 1 |
| 5322 462 44292 | FOOT FOR CABINET | 4 |
| | FRAME | - |
| 5322 325 50101 | HOLDER MAINS CABLE | 1 |
| 4822 110 63065 M | RESISTOR 27E 5% CR25 | R1 1 |

UNIT U2 PM6661-64

| Ordering no. | Description | Item | Qty. |
|---|---|---|---|
| 5322 209 85455 | LEDS IN DISPLAY | D201-08 | 8 |
| 5322 130 44593 | BC369 | TS201-07 | 7 |
| 4822 110 63081 M | RESISTOR 100E CR25 | R201-07 | 7 |

UNIT U3 PM6661-64

| Ordering no. | Description | Item | Qty. |
|---|---|---|---|
| | CONNECTOR 2P | | 1 |
| 5322 256 34031 | FUSEHOLDER | VL301 | 2 |
| 5322 276 14066 | MAINS SWITCH | | 1 |
| 4822 253 20006 M | FUSE 220V 100MA | VL301 | 1 |
| 4822 253 20009 M | FUSE 110V 200MA | VL301 | 1 |
| 5322 414 14011 | PUSH BUTTON | | 1 |
| 5322 535 94648 | EXTENSION BAR | SWITCH | 1 |
| 4822 492 60705 M | CLAMPING SPRING | EXT.BAR | 1 |
| 5322 462 44291 | CAP OVER FUSE | VL301 | 1 |

## 10.2. Spare parts unit 4

UNIT U4 PM6664
FIXED RESISTORS

| Ordering no. | Ohm | Tol.(%) | Type | Item | Qty |
|---|---|---|---|---|---|
| 4822 110 63107 M | 1K | 5 | CR25 | R401 | 1 |
| 4822 110 63125 M | 4.7K | 5 | CR25 | R402 | 1 |
| 4822 110 63147 M | 33K | 5 | CR25 | R403 | 1 |
| 4822 110 63125 M | 4.7K | 5 | CR25 | R404 | 1 |
| 4822 110 63107 M | 1K | 5 | CR25 | R405 | 1 |
| 4822 110 63147 M | 33K | 5 | CR25 | R406 | 1 |
| 4822 110 63147 M | 33K | 5 | CR25 | R407 | 1 |
| 4822 111 30067 M | 33 | 5 | CR16 | R408 | 1 |
| 4822 110 63067 M | 33 | 5 | CR25 | R409 | 1 |
| 4822 110 63107 M | 1K | 5 | CR25 | R410 | 1 |
| 4822 110 63138 M | 15K | 5 | CR25 | R411 | 1 |
| 4822 110 63134 M | 10K | 5 | CR25 | R412 | 1 |
| 4822 110 63141 M | 18K | 5 | CR25 | R413 | 1 |
| 4822 110 63161 M | 100K | 5 | CR25 | R414 | 1 |
| 4822 110 63134 M | 10K | 5 | CR25 | R415 | 1 |
| 4822 110 63103 M | 680 | 5 | CR25 | R416 | 1 |
| 4822 110 63134 M | 10K | 5 | CR25 | R417 | 1 |
| 4822 110 63143 M | 22K | 5 | CR25 | R418 | 1 |
| 4822 111 30269 M | 1K | 5 | CR16 | R419 | 1 |
| 4822 111 30067 M | 33 | 5 | CR16 | R421 | 1 |
| 4822 111 30272 M | 680 | 5 | CR16 | R422 | 1 |
| 4822 111 30323 M | 270 | 5 | CR16 | R423 | 1 |
| 4822 111 30264 M | 2.7K | 5 | CR16 | R424 | 1 |
| 4822 110 63101 M | 560 | 5 | CR25 | R425 | 1 |
| 4822 111 30245 M | 47 | 5 | CR16 | R426 | 1 |
| 4822 111 30347 M | 10 | 5 | CR16 | R427 | 1 |
| 4822 110 63134 M | 10K | 5 | CR25 | R428 | 1 |
| 4822 110 63103 M | 680 | 5 | CR25 | R429 | 1 |
| 4822 110 63054 M | 10 | 5 | CR25 | R430 | 1 |
| 4822 110 63092 M | 270 | 5 | CR25 | R433 | 1 |
| 4822 110 63138 M | 15K | 5 | CR25 | R434 | 1 |
| 4822 110 63098 M | 470 | 5 | CR25 | R435 | 1 |
| 4822 110 63089 M | 220 | 5 | CR25 | R441 | 1 |
| 4822 110 63116 M | 2.2K | 5 | CR25 | R442 | 1 |
| 5322 116 54337 | 332K | 5 | MR30 | R443 | 1 |
| 4822 110 63161 M | 100K | 5 | CR25 | R444 | 1 |
| 5322 116 54337 | 332K | 5 | MR30 | R446 | 1 |

UNIT U4 PM6664
VARIABLE RESISTORS

| Ordering no. | Ohm | Tol.(%) | | Item | Qty. |
|---|---|---|---|---|---|
| 5322 101 14069 | 22K | 20% | POTM | R445 | 1 |

UNIT U4 PM6664
FIXED CAPACITORS

| Ordering no. | | Farad | Tol.(%) | Volts | Item | Qty. |
|---|---|---|---|---|---|---|
| 4822 122 31177 | M | 470P | 10 | 100 | C401 | 1 |
| 4822 122 31072 | M | 47P | 2 | 100 | C402 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C403 | 1 |
| 4822 122 31043 | M | 3.9P | 2 | 100 | C404 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C405 | 1 |
| 4822 122 31173 | M | 220P | 10 | 100 | C406 | 1 |
| 4822 122 31173 | M | 220P | 10 | 100 | C407 | 1 |
| 4822 122 31072 | M | 47P | 2 | 100 | C408 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C409 | 1 |
| 4822 122 30128 | M | 4.7N | 10 | 100 | C410 | 1 |
| 4822 122 31063 | M | 22P | 2 | 100 | C412 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C413 | 1 |
| 4822 122 31173 | M | 220P | 10 | 100 | C414 | 1 |
| 4822 122 31173 | M | 220P | 10 | 100 | C415 | 1 |
| 4822 122 31177 | M | 470P | 10 | 100 | C416 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C417 | 1 |
| 4822 122 31072 | M | 47P | 2 | 100 | C418 | 1 |
| 4822 122 31072 | M | 47P | 2 | 100 | C419 | 1 |
| 4822 122 31175 | M | 1N | 10 | 100 | C420 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C421 | 1 |
| 5322 124 14064 | | 4.7M | +10+50 | 10 | C425 | 1 |
| 5322 124 14064 | | 4.7M | +10+50 | 10 | C426 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C428 | 1 |
| 4822 124 20461 | M | 47M | +10+50 | 10 | C431 | 1 |
| 4822 124 20461 | M | 47M | +10+50 | 10 | C432 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C433 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C434 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C443 | 1 |
| 5322 124 14079 | | 68M | +10+50 | 6.3 | C444 | 1 |
| 4822 122 30043 | M | 10N | +20+80 | 63 | C445 | 1 |
| 4822 122 31067 | M | 33P | 2 | 100 | C446 | 1 |
| 5322 124 14079 | | 68M | +10+50 | 6.3 | C447 | 1 |

UNIT U4 PM6664
VARIABLE CAPACITORS

| Ordering no. | Farad | Item | Qty. |
|---|---|---|---|
| 5322 125 50057 | 5.5+65P | C411 | 1 |
| 5322 125 50057 | 5.5+65P | C427 | 1 |
| 5322 125 54029 | 2+18P | C441 | 1 |
| 5322 125 54029 | 2+18P | C442 | 1 |

UNIT U4 PM6664
INTEGRATED CIRCUITS

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 5322 209 85414 | UM334 | IC401 | 1 |
| 5322 209 85414 | UM334 | IC402 | 1 |
| 5322 209 85458 | N 11C90DC FAIRCHILD | IC403 | 1 |
| 5322 209 84163 | SN72741P | IC404 | 1 |
| 5322 209 84163 | SN72741P | IC405 | 1 |
| 5322 209 84163 | SN74LS74N | IC406 | 1 |
| 5322 209 84163 | SN72741P | IC407 | 1 |

UNIT U4 PM6664
TRANSISTORS

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 4822 130 40937 | M BC548B | TS401 | 1 |
| 5322 130 44179 | BFR90 | TS402 | 1 |
| 5322 130 44179 | BFR90 | TS403 | 1 |
| 4822 130 40937 | M BC548B | TS404 | 1 |

UNIT U4 PM6664
DIODES

| Ordering no. | Type | Item | Qty. |
|---|---|---|---|
| 5322 130 34364 | BA379 | GR401 | 1 |
| 5322 130 34364 | BA379 | GR402 | 1 |
| 5322 130 34364 | BA379 | GR403 | 1 |
| 5322 130 30613 | BAW62 | GR404 | 1 |
| 5322 130 34302 | BA280 | GR405 | 1 |
| 5322 130 34302 | BA280 | GR406 | 1 |
| 5322 130 34302 | BA280 | GR407 | 1 |
| 5322 130 34302 | BA280 | GR408 | 1 |
| 5322 130 30613 | BAW62 | GR409 | 1 |
| 5322 130 34302 | BA280 | GR411 | 1 |
| 5322 130 34302 | BA280 | GR412 | 1 |
| 5322 130 30613 | BAW62 | GR413 | 1 |

UNIT U4 PM6664
INDUCTANCES

| Ordering no. | Description | Item | Qty. |
|---|---|---|---|
| 5322 158 14119 | COIL | L401 | 1 |
| 5322 158 14119 | COIL | L402 | 1 |
| 5322 158 10276 | INDUCTANCE 4.7MH | L403 | 1 |
| 4822 526 10025 | M FXC BEAD | L404 | 1 |
| 4822 526 10025 | M FXC BEAD | L405 | 1 |
| 4822 526 10025 | M FXC BEAD | L406 | 1 |
| 4822 526 10025 | M FXC BEAD | L407 | 1 |
| 4822 526 10025 | M FXC BEAD | L408 | 1 |
| 4822 526 10025 | M FXC BEAD | L409 | 1 |
| 5322 158 14049 | INDUCTANCE 150NH | L410 | 1 |
| 4822 526 10025 | M FXC BEAD | L411 | 1 |
| 5322 158 10052 | HF CHOKE | L412 | 1 |
| 5322 158 10052 | HF CHOKE | L413 | 1 |
| 5322 158 10289 | INDUCTANCE 680NH | L415 | 1 |
| 5322 158 10289 | INDUCTANCE 680NH | L416 | 1 |

UNIT U4 PM6664
MISCELLANEOUS

| Ordering no. | Description | Item | Qty. |
|---|---|---|---|
| 5322 265 54006 | CONNECTOR 10P FEMALE | PO BU401 | 1 |
| 5322 265 64062 | CONNECTOR 10P MALE | PO BU401 | 1 |
| 5322 265 54006 | CONNECTOR 5P FEMALE | PO BU402 | 1 |
| 5322 265 64062 | CONNECTOR 5P MALE | PO BU402 | 1 |
| 5322 216 94174 | N TCXO 8388608HZ | KT401 | 1 |

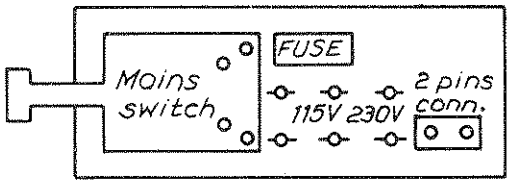



*Figure 10.3. Component layout unit 3*

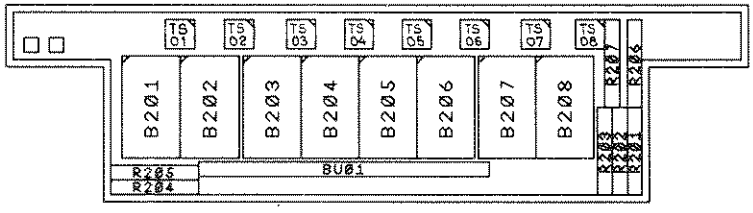
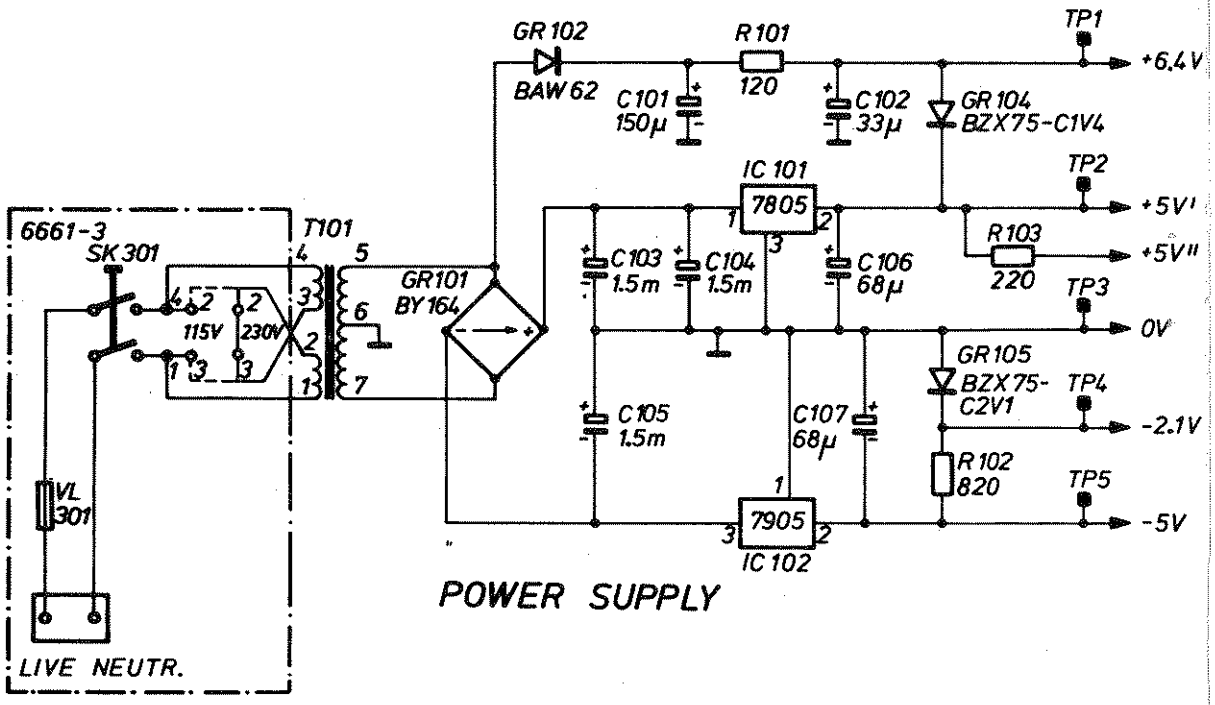
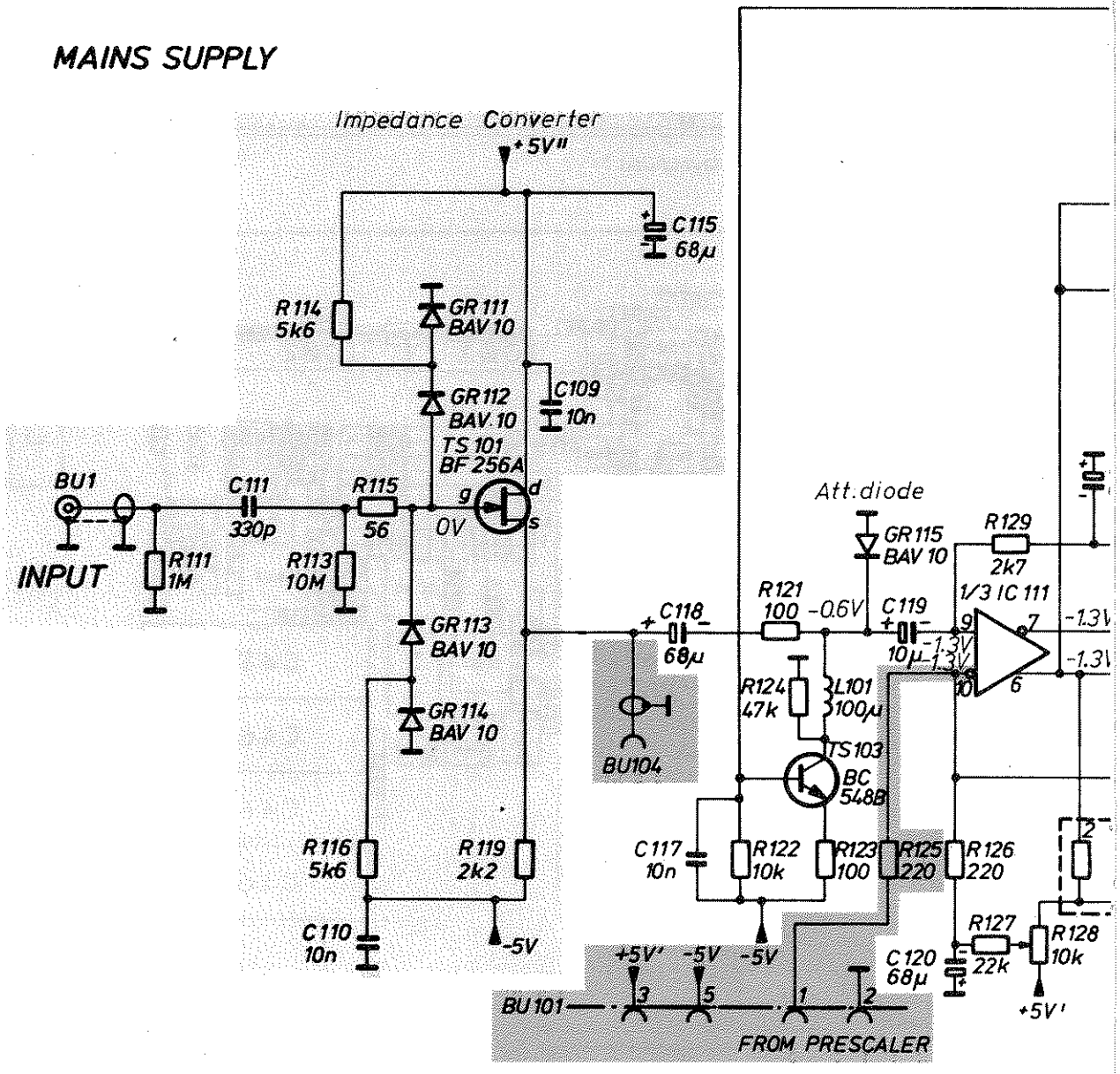



*Figure 10.2. Component layout unit 2*




POWER SUPPLY

MAINS SUPPLY



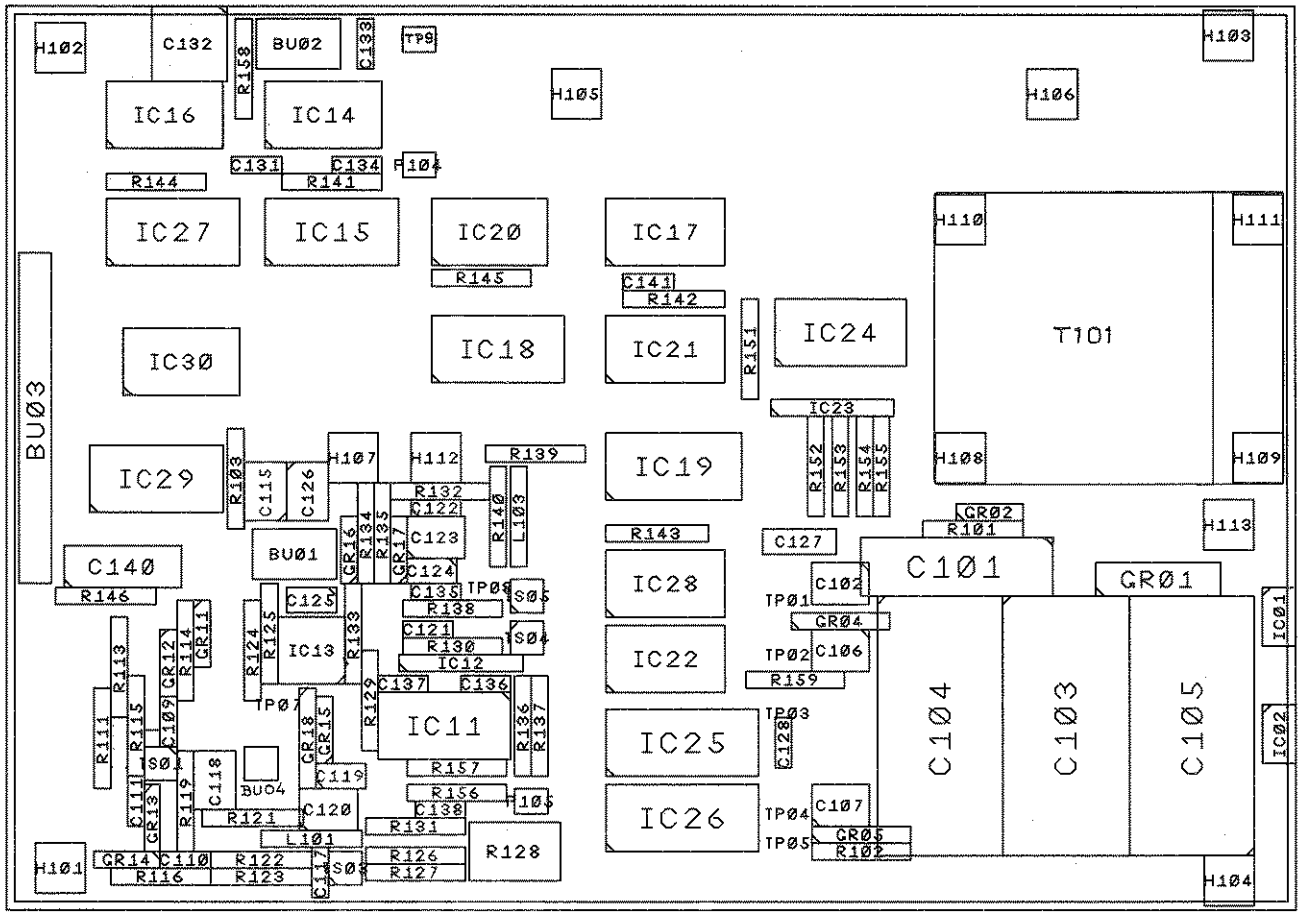



*Figure 10.1. Component layout unit 1*

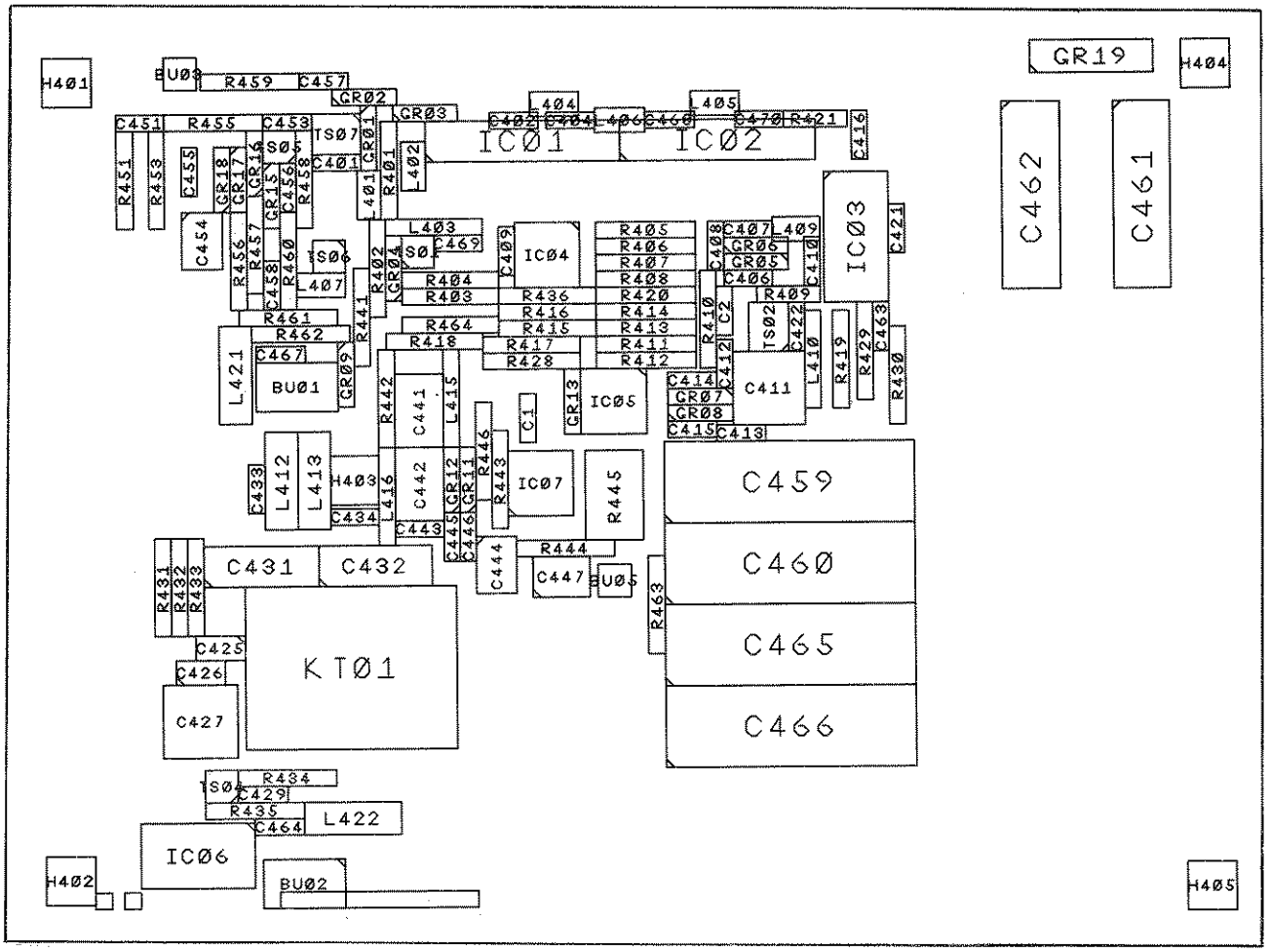



*Figure 10.4. Component layout unit 4*

BU 102
C131 82p
1/6 IC114
R158 2k2
TP9
IC 115 4040
R 2^12- CNT
R141 10M
C132 ..65p
C133 47p
C134 82p
+5V'
IC 116 4024
R 2^7- CNT
25 ms
250 ms
IC 120
R
S
+1 2- CNT
S=4
+1 5- CNT
1/6 IC118
1/6 IC119
1/4 IC121
1/4 IC117
+5V'
1/6 IC123
47k
Reset
Main Gate Signal
c b a
1/6 IC114
Transfer 10^1...7
Transfer 10^0
IC 127
BIN→DEC
IC 124
G1
G2
IC 123
47k
AGC Ampl.
AGC Detector
GR 116 BAV 10
GR117 BAV10
C125 4.7µ
GR 118 BZY88-C3V3
R132 2k2
R133 4k7
IC113
TP7
-2V
-5V
C135 1n
C124 2µ2
R134 180k
R135 180k
R139 330
ECL-TTL Conv.
R140 560
L 103 680n
TP8
-3V
-0.5V
-0.9V
-1.8V
TS 104 2N5770
TS 105 2N5770
L102
L104
L105
R138 220
Schmitt-trigger
C138 33p
R157 330
R156 150
R136 150
C136 33p
R137 330
R130 2k2
R131 4k7
-1.3V
IC 112
Input Amplifier
C137 10n
C126 68µ
R 159 1k
C 127 100n
R 151 1k
+6.4V
C 128 10n
-2.1V
IC 125
S=19999
10
100
1000
10000
20000
CT=100
CT=1000
CT=10000
CT=20000
IC 126
R152
R153
R154
R155
4x47k
C141 1n
R142 47k
BU101
Prescaler
PM 6661 ONLY
PM 6664 ONLY

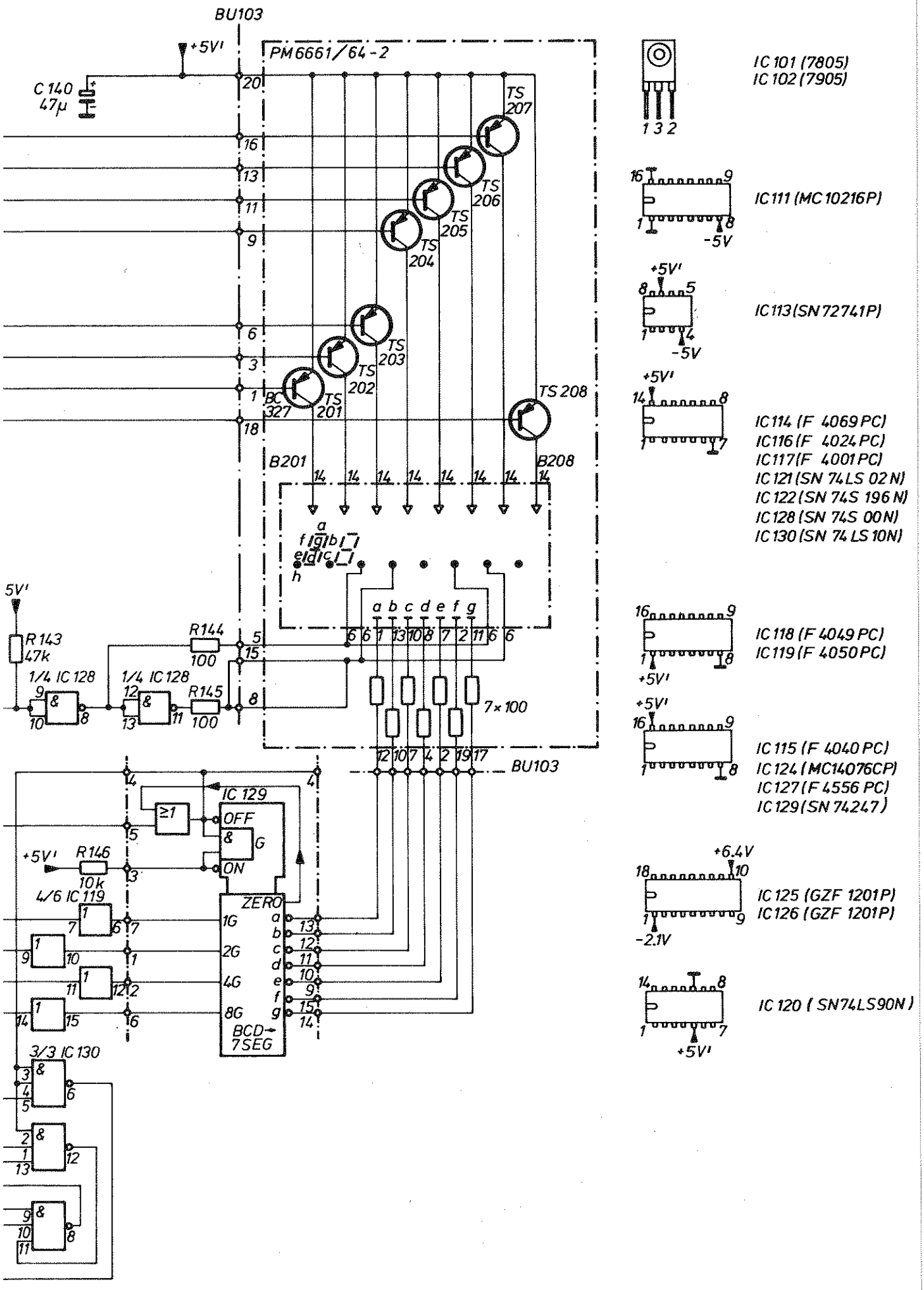
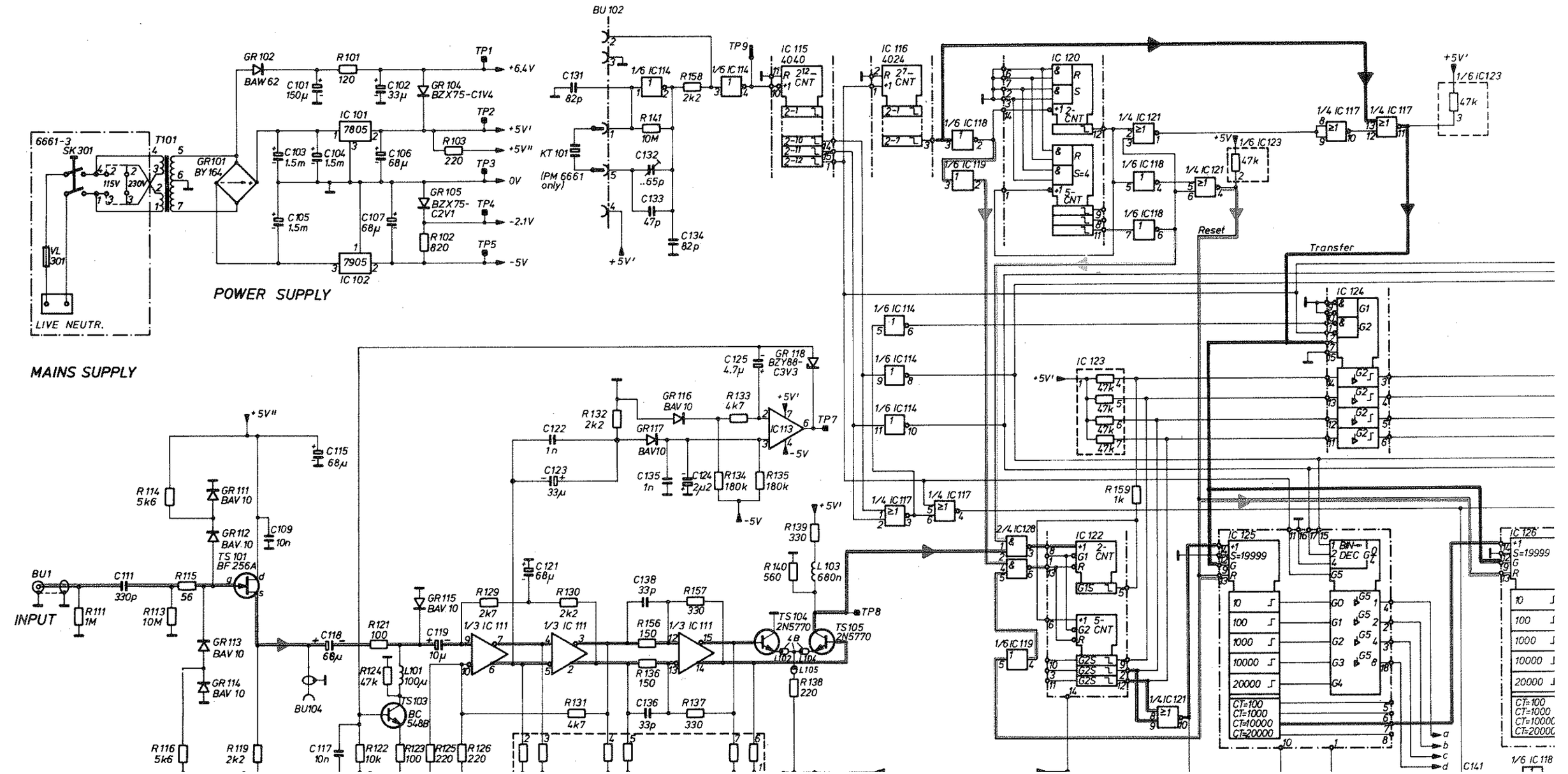
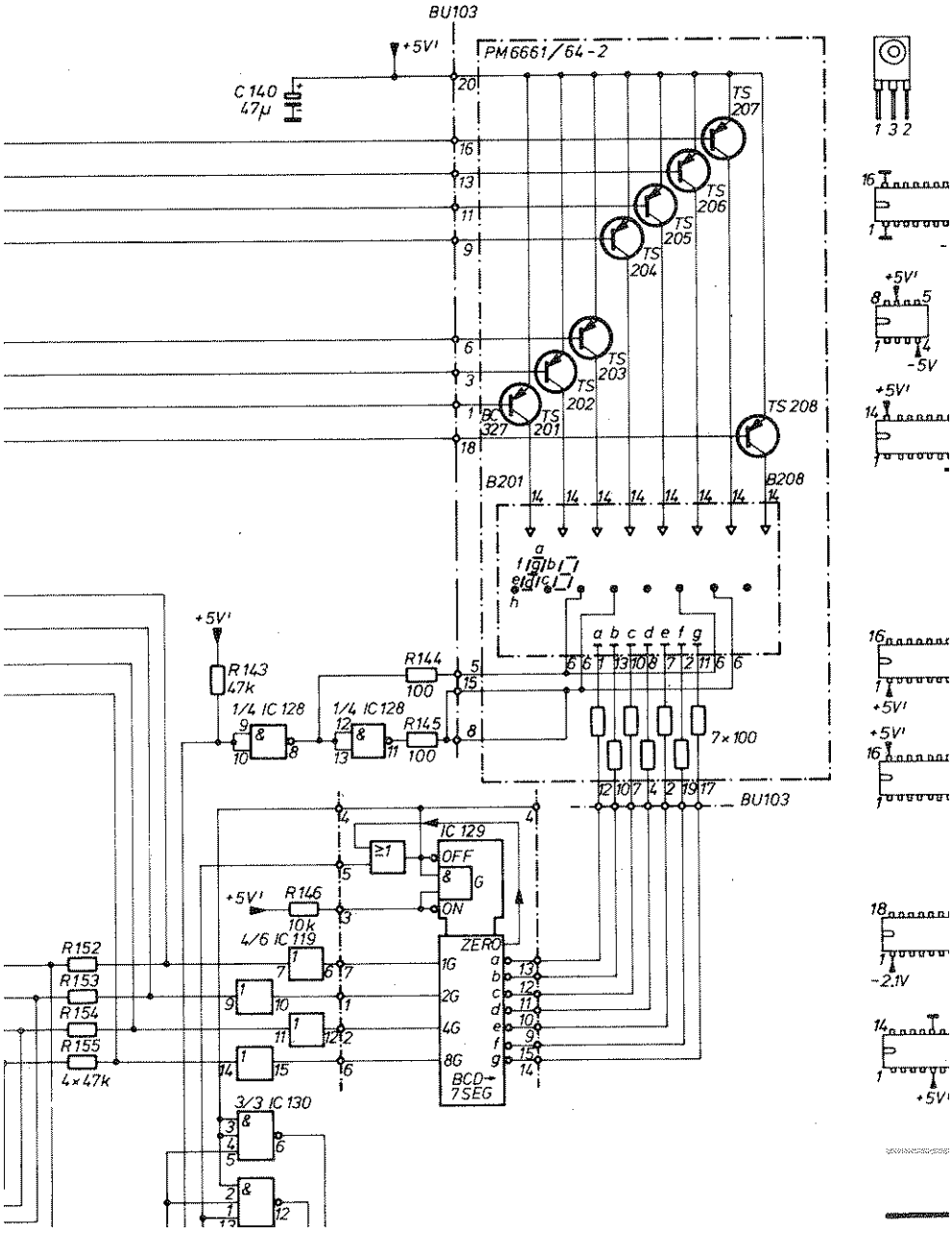



Figure 11.1. Circuit diagram unit 1, 2 and 3


POWER SUPPLY
MAINS SUPPLY
6661-3
SK 301
T101
115V
230V
GR 101
BY 164
VL 301
LIVE NEUTR.
GR 102
BAW 62
R 101
120
C 101
150µ
C 102
33µ
GR 104
BZX75-C1V4
IC 101
7805
C 103
1.5m
C 104
1.5m
C 106
68µ
R 103
220
C 105
1.5m
C 107
68µ
GR 105
BZX75-C2V1
R 102
820
IC 102
7905
TP1
+6.4V
TP2
+5V'
+5V''
TP3
0V
TP4
-2.1V
TP5
-5V
BU 102
C 131
82p
1/6 IC 114
R 141
10M
KT 101
(PM 6661 only)
C 132
..65p
C 133
47p
R 158
2k2
C 134
82p
TP9
IC 115
4040
R 2^12 CNT
IC 116
4024
R 2^7 CNT
IC 120
R
S
2- CNT
S=4
5- CNT
1/6 IC 118
1/6 IC 119
1/4 IC 121
1/6 IC 123
47k
1/4 IC 117
+5V'
Reset
Transfer
IC 124
G1
G2
IC 123
47k
R 159
1k
IC 122
2- CNT
5- CNT
G1
G2
G1S
G2S
IC 125
S=19999
BIN-DEC
10
100
1000
10000
20000
CT=100
CT=1000
CT=10000
CT=20000
IC 126
1/6 IC 123
1/6 IC 118
C 125
4.7µ
GR 118
BZY88-C3V3
GR 116
BAV 10
R 133
4k7
IC 113
TP7
C 122
1n
GR 117
BAV 10
R 132
2k2
C 123
33µ
C 135
1n
C 124
2µ2
R 134
180k
R 135
180k
-5V
R 139
330
R 140
560
L 103
680n
TP8
TS 104
2N5770
TS 105
2N5770
L 102
L 104
L 105
R 138
220
C 115
68µ
R 114
5k6
GR 111
BAV 10
GR 112
BAV 10
C 109
10n
TS 101
BF 256A
BU1
INPUT
C 111
330p
R 115
56
R 111
1M
R 113
10M
GR 113
BAV 10
GR 114
BAV 10
BU104
C 118
68µ
R 121
100
C 119
10µ
GR 115
BAV 10
R 129
2k7
R 130
2k2
1/3 IC 111
C 121
68µ
C 138
33p
R 157
330
R 156
150
R 136
150
C 136
33p
R 137
330
R 131
4k7
R 124
47k
L 101
100µ
TS 103
BC 548B
C 117
10n
R 122
10k
R 123
100
R 125
220
R 126
220
R 116
5k6
R 119
2k2
a
b
c
d
C141


BU103
+5V'
PM6661/64-2
C 140
47µ
TS 207
TS 206
TS 205
TS 204
TS 203
TS 202
TS 201
TS 208
BC 327
B201
B208
a
b
c
d
e
f
g
h
R143
47k
R144
100
R145
100
1/4 IC 128
1/4 IC 128
7×100
BU103
IC 129
OFF
ON
G
ZERO
BCD→
7SEG
R146
10k
4/6 IC 119
3/3 IC 130
R152
R153
R154
R155
4×47k
1 3 2
-5V
-2.1V

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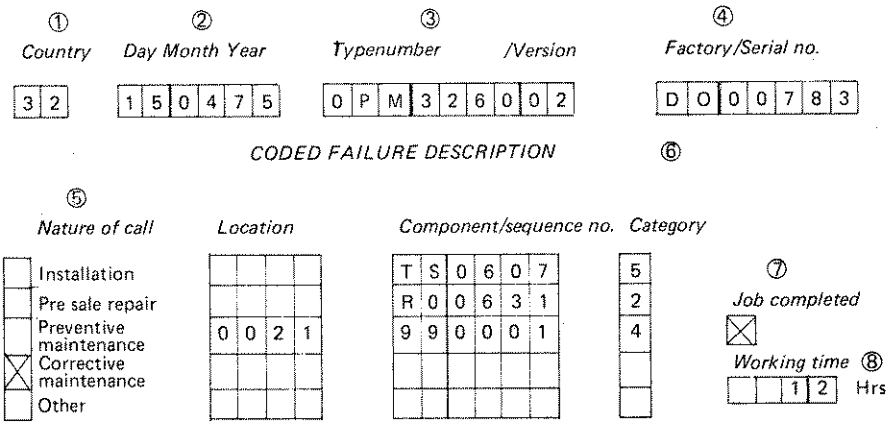
## CODING SYSTEM OF FAILURE REPORTING FOR QUALITY ASSESSMENT OF T & M INSTRUMENTS

**(excl. potentiometric recorders)**

The information contents of the coded failure description is necessary for our computerized processing of quality data.

Since the reporting of repair and maintenance routines must be complete and exact, we give you an example of a correctly filled-out PHILIPS SERVICE Job sheet.




Detailed description of the information to be entered in the various boxes:

①Country: [3 2] = Switzerland

②Day Month Year [1 5 0 4 7 5] = 15 April 1975

③Type number/Version [O P M 3 2 6 0 0 2] = Oscilloscope PM 3260, version 02 (in later oscilloscopes this number is placed in front of the serial no)

④Factory/Serial number [D O 0 0 7 8 3] = DO 783 These data are mentioned on the type plate of the instrument

⑤Nature of call: Enter a cross in the relevant box

⑥Coded failure description

*Location*

[ ][ ][ ][ ]

These four boxes are used to isolate the problem area. Write the code of the part in which the fault occurs, e.g. unit no or mechanical item no of this part (refer to 'PARTS LISTS' in the manual).

Example: 0001 for Unit 1
000A for Unit A
0075 for item 75

If units are not numbered, do not fill in the four boxes; see Example Job sheet.

*Component/sequence no.*

[ ][ ][ ][ ][ ][ ]

These six boxes are intended to pinpoint the faulty component.

A. Enter the component designation as used in the circuit diagram. If the designation is alfa-numeric, the letters must be written (starting from the left) in the two left-hand boxes and the figures must be written (in such a way that the last digit occupies the right-most box) in the four right-hand boxes.

B. Parts not identified in the circuit diagram:

990000 Unknown/Not applicable
990001 Cabinet or rack (text plate, emblem, grip, rail, graticule, etc.)
990002 Knob (incl. dial knob, cap, etc.)
990003 Probe (only if attached to instrument)
990004 Leads and associated plugs
990005 Holder (valve, transistor, fuse, board, etc.)
990006 Complete unit (p.w. board, h.t. unit, etc.)
990007 Accessory (only those without type number)
990008 Documentation (manual, supplement, etc.)
990009 Foreign object
990099 Miscellaneous

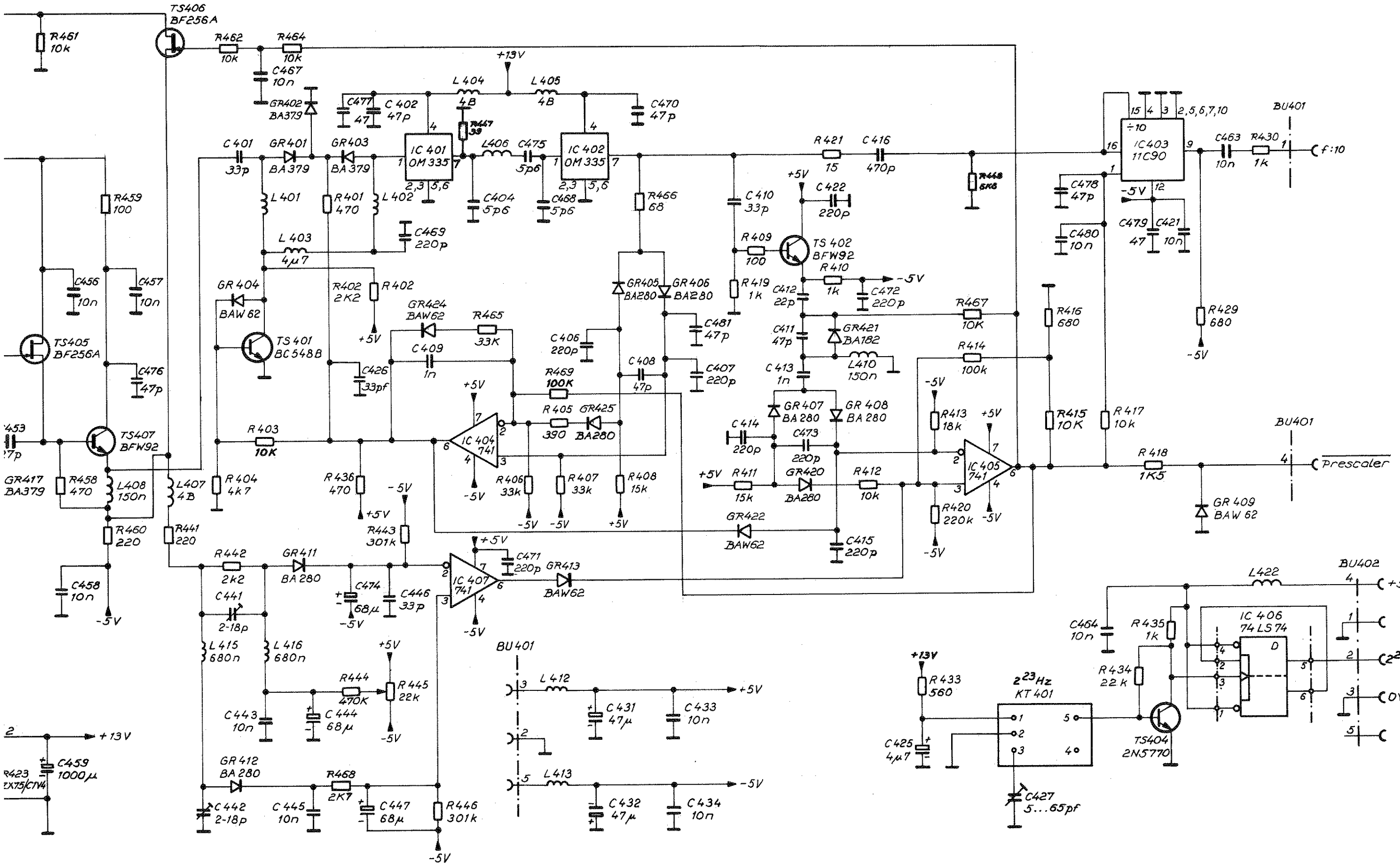
*Category*

[ ]

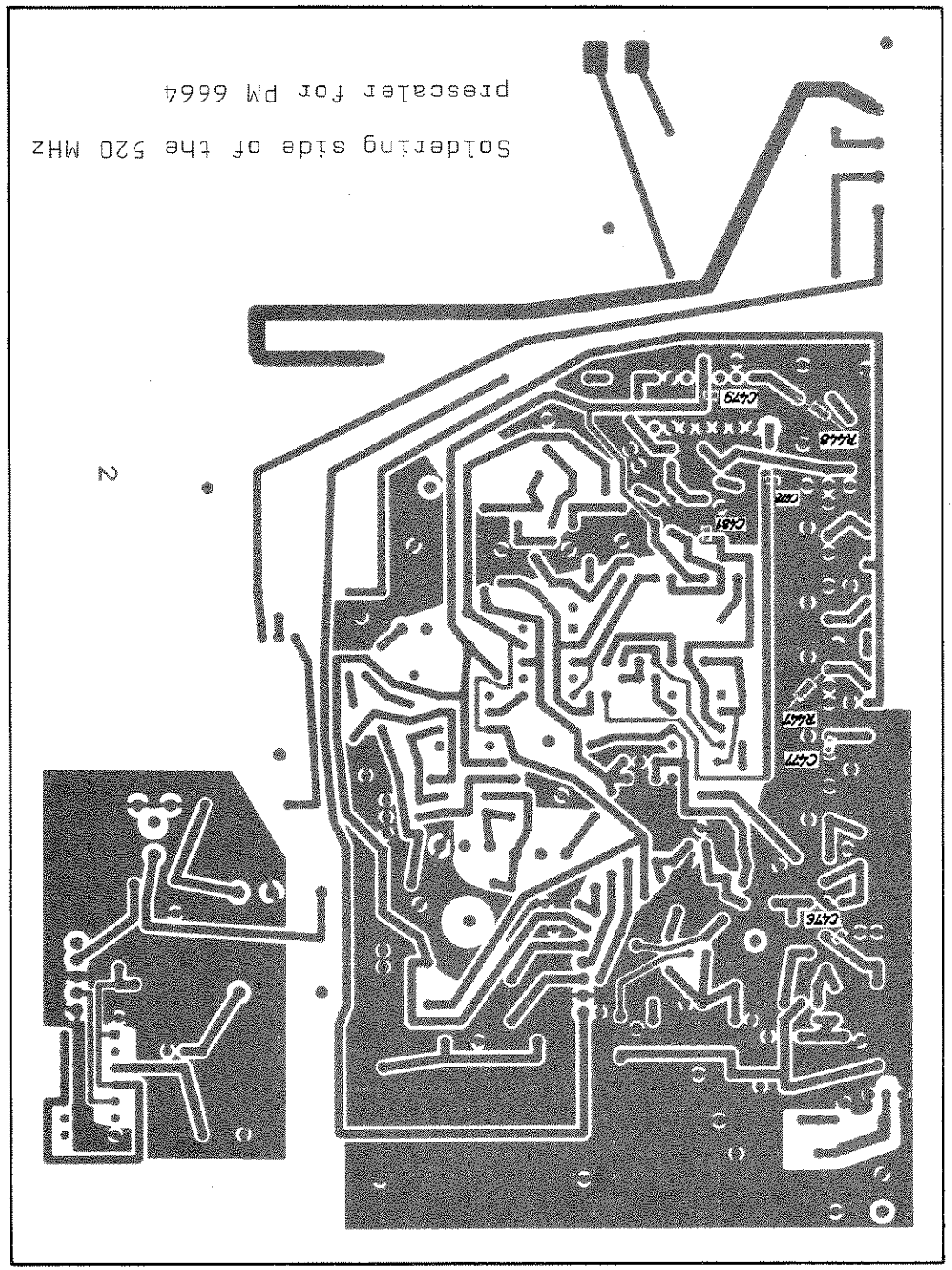
0 Unknown, not applicable (fault not present, intermittent or disappeared)
1 Software error
2 Readjustment
3 Electrical repair (wiring, solder joint, etc.)
4 Mechanical repair (polishing, filing, remachining, etc.)
5 Replacement (of transistor, resistor, etc.)
6 Cleaning and/or lubrication
7 Operator error
8 Missing items (on pre-sale test)
9 Environmental requirements are not met

⑦Job completed: Enter a cross when the job has been completed.

⑧Working time: Enter the total number of working hours spent in connection with the job (excluding travelling, waiting time, etc.), using the last box for tenths of hours.




Circuit diagram of the 520 MHz prescaler for PM 6664



Soldering side of the 520 MHz
prescaler for PM 6664