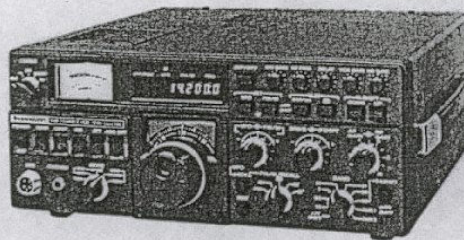


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SPECIFICATIONS



GENERAL

Frequency Range:

| | |
|----------------|---|
| 160 meter band | 1.80 to 2.00 MHz |
| 80 meter band | 3.50 to 4.00 MHz |
| 40 meter band | 7.00 to 7.30 MHz |
| 20 meter band | 14.00 to 14.35 MHz |
| 15 meter band | 21.00 to 21.45 MHz |
| 10 meter band | 28.00 to 29.70 MHz |
| WWV | 10.0 MHz (receive only) |
| AUX 2BAND | A: 2.0 to 15.0 MHz each 500 kHz band |
| | B: 18.0 to 18.5 MHz |
| | C: 25.0 to 25.5 MHz |

Mode:

SSB(A3J), CW(A1), FSK(F1)

Voltage Requirements:

11.0VDC to 16.0VDC
(13.8VDC nominal)

Power Consumption (at 13.8 VDC VSWR less than 1.5:1):

| | TS-180 (TS-180S) | TS-180S (with D.F.C) |
|----------|------------------|----------------------|
| Receive | 1.2 A | 1.6 A |
| Transmit | 19.6 A | 20 A |

Semiconductor Complement:

| | TS-180 (TS-180S) | TS-180S (with D.F.C) |
|-------------|------------------|----------------------|
| Transistors | 143 | 177 |
| FETS | 21 | 26 |
| ICS | 33 | 53 |
| Diodes | 203 | 240 |

Dimensions: (Projections not included)

325(12-13/16") wide x 133(5-1/4") high
x 287(11-5/16") deep

Weight:

| | TS-180 (TS-180S) | TS-180S (with D.F.C) |
|--|--------------------|----------------------|
| | 11.0 kg (24.2 lbs) | 11.5 kg (25.3 lbs) |

TRANSMITTER SECTION

Input Power:

| | 160 to 15 meters band | 10 meters band |
|-----|-----------------------|----------------|
| SSB | 200 Watts PEP | 160 Watts PEP |
| CW | 160 Watts PEP | 140 Watts DC |
| FSK | 100 Watts DC | 50 Watts DC |

Antenna Impedance:

50 Ohms

Carrier Suppression:

Carrier better than 40 dB down from the output signal

Unwanted Sideband Suppression:

Unwanted sideband is better than 60 dB down from the output signal

Harmonic Radiation:

Better than 40 dB down from output signal

Spurious Radiation:

Better than 50 dB down from output signal

Microphone Impedance:

500Ω to 50 kΩ

Transmitter AF response:

400 to 2600 kHz

RECEIVER SECTION

Receiver Sensitivity:

0.25μV S+N/N 0 dB or more

Image Rejection:

Image frequency better than 60 dB down from the output signal

IF Rejection:

IF frequency is 80 dB or more down from output signal

Frequency Stability:

Within ±1 kHz during the first hour after 1 minute of warmup
Within 100 Hz during any 30 minute period after warmup

Receiver Selectivity:

SSB, CW WIDE
2.4 kHz (-6 dB)
4.2 kHz (-60 dB)
CW NAR, FSK (With optional filter YK-88C)
0.5 kHz (-6 dB)
1.8 kHz (-60 dB)

Audio Output:

More than 2 watts (with less than 10% distortion) into an 4 ohm load.

AF Output Impedance:

4 to 16 ohms (speaker or headphones)

FEATURES

1. DFC (Digital Frequency Control), with four tunable memories.

- Memories are usable in transmit and or receive modes. Split-frequency operation is possible with TS-180S VFO and any one of the memories, with TS-180S VFO and optional VFO-180 external VFO, and with a DFC memory and VFO-180.

- Memories can store frequencies from the TS-180S VFO, FIX CH, and VFO-180. Also, frequencies can be transferred between memories.

- Memory-shift paddle switches allow any of the memory frequencies to be tuned in 20-Hz steps up or down, slow or fast, with recall of the original stored frequency.

2. High-performance solid-state final.

- No dipping or loading. Just dial up the frequency, peak the drive, and operate.

- High power...200 W PEP/160 W DC input on 160-15 meters, and 160 W PEP/140 W DC on 10 meters.

- Highly reliable, with large heatsink.

- Final transistors (two SFR1714s, each with PC=250 W) are manufactured by Motorola to Kenwood's specifications.

- Double protection circuits. If the VSWR is more than 10:1, transmit power is automatically reduced to about 1/10 of normal. Also, if the temperature of the core of the transmit output coil rises abnormally, transmit power is reduced to about 1/10 of normal.

3. Covers 160-10 meters, with provisions for WARC allocations.

- Transceivers on 160, 80/75, 40, 20, 15, and all of 10 meters.

- Receives WWV on 10 MHz

- Adaptable, by installing additional parts to three new bands, if they should be made available at the World Administrative Radio Conference. AUX 1 and AUX 2 as well as the WWV positions are provided on the BAND switch for this purpose.

- The TS-180S VFO covers more than 50 kHz above and below each band, for MARS and other applications, and thus will accommodate shifts and expansions of existing bands that might be made at WARC.

4. Built-in microprocessor-controlled large digital display.

- Shows actual VFO frequency.

- Digital display memory and display of frequency difference. With DSP/M switch turned on when the DSP/DIFF switch is depressed, the frequency that was displayed is memorized and shown at the left side of the digital display, and the difference between the

85

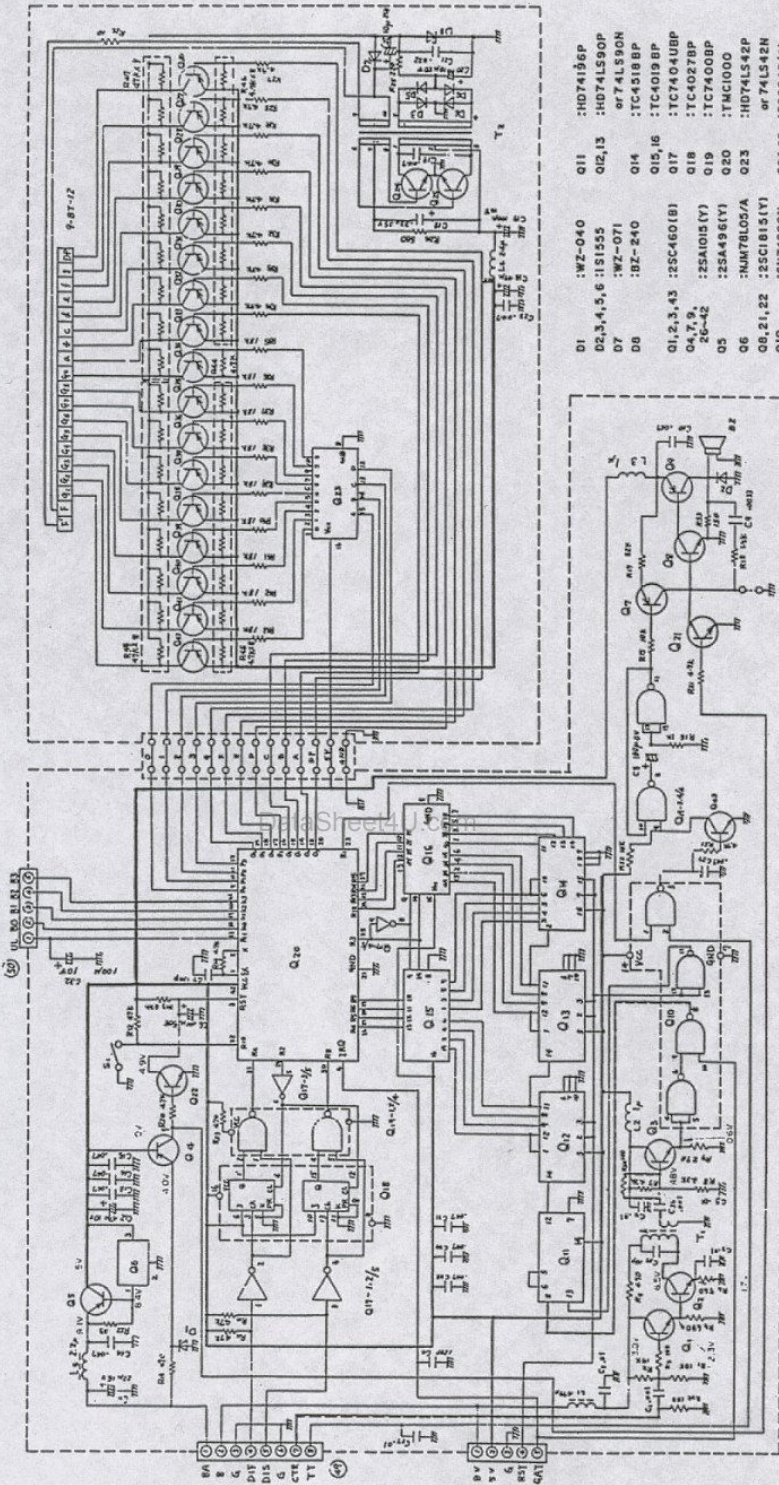
TS-180S

KENWOOD

▼ COUNTER ASS'Y UNIT (X60-1100-00)

▼ DISPLAY UNIT (X54-1430-00)

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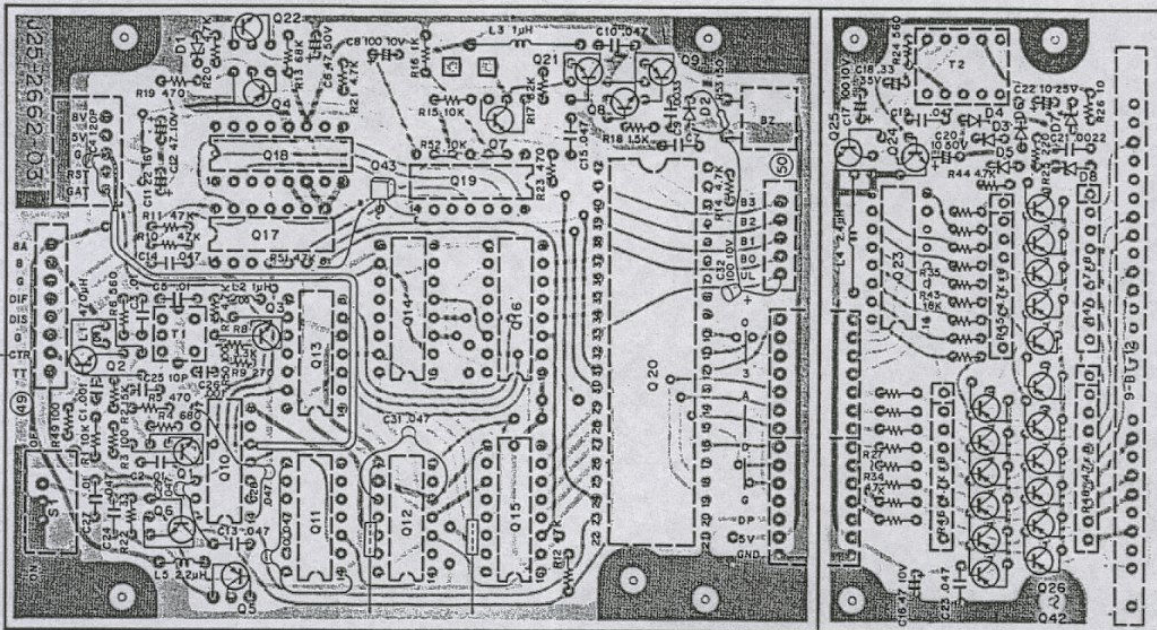


| | | | |
|--------------|-------------|--------|-----------------------|
| D1 | :WZ-040 | Q11 | :HD74136P |
| D2,3,4,5,6 | :1S1555 | Q12,13 | :HD74LS90P or 74LS90N |
| D7 | :WZ-071 | Q14 | :TC4518BP |
| D8 | :BZ-240 | Q15,16 | :TC4013BP |
| Q1,2,3,4,5 | :25C460(B) | Q17 | :TC7404UBP |
| Q4,7,9,26-42 | :25A1015(Y) | Q18 | :TC4027BP |
| Q5 | :25A496(Y) | Q19 | :TC7400BP |
| Q6 | :NM78105(A) | Q20 | :TAC1000 |
| Q8,21,22 | :25C1815(Y) | Q23 | :HD74LS42P or 74LS42N |
| Q10 | :SR74500N | Q24,25 | :25C945(Q) |

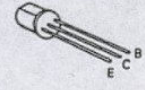
From Premix unit

▼ COUNTER ASS'Y UNIT (X60-1100-00)

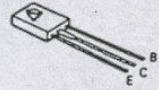
▼ DISPLAY UNIT (X54-1430-00)



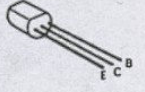
2SC460(B)
2SC733(Y)



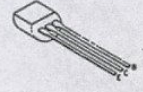
2SA496(Y)



2SC945(Q)



2SC1815(Y)
2SA1015(Y)



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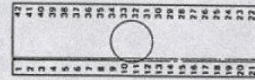
HD74LS42P
TC4019BP
TC4027BP
TC4518BP

NJM78L05/A



SN74S00
HD74196P
HD74LS90P
TC7400BP
TC7404UBP

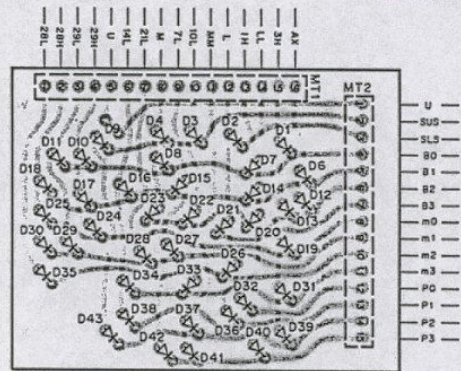
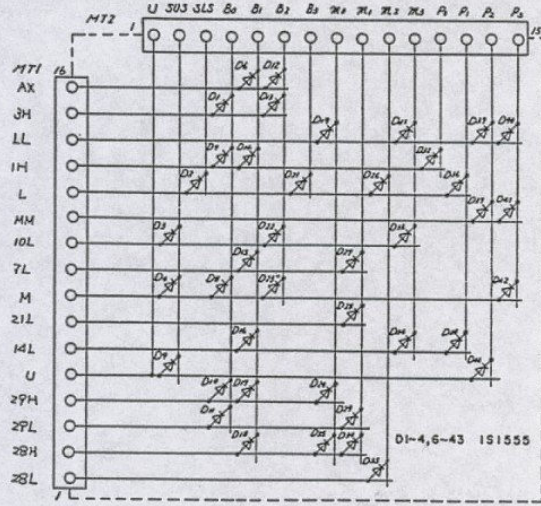
TMC1000



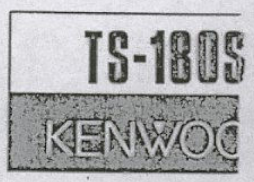
▼ PLL ASS'Y UNIT (X60-1120-00)

▼ MATRIX UNIT (X53-1130-00) PARTS LIST: Page 48

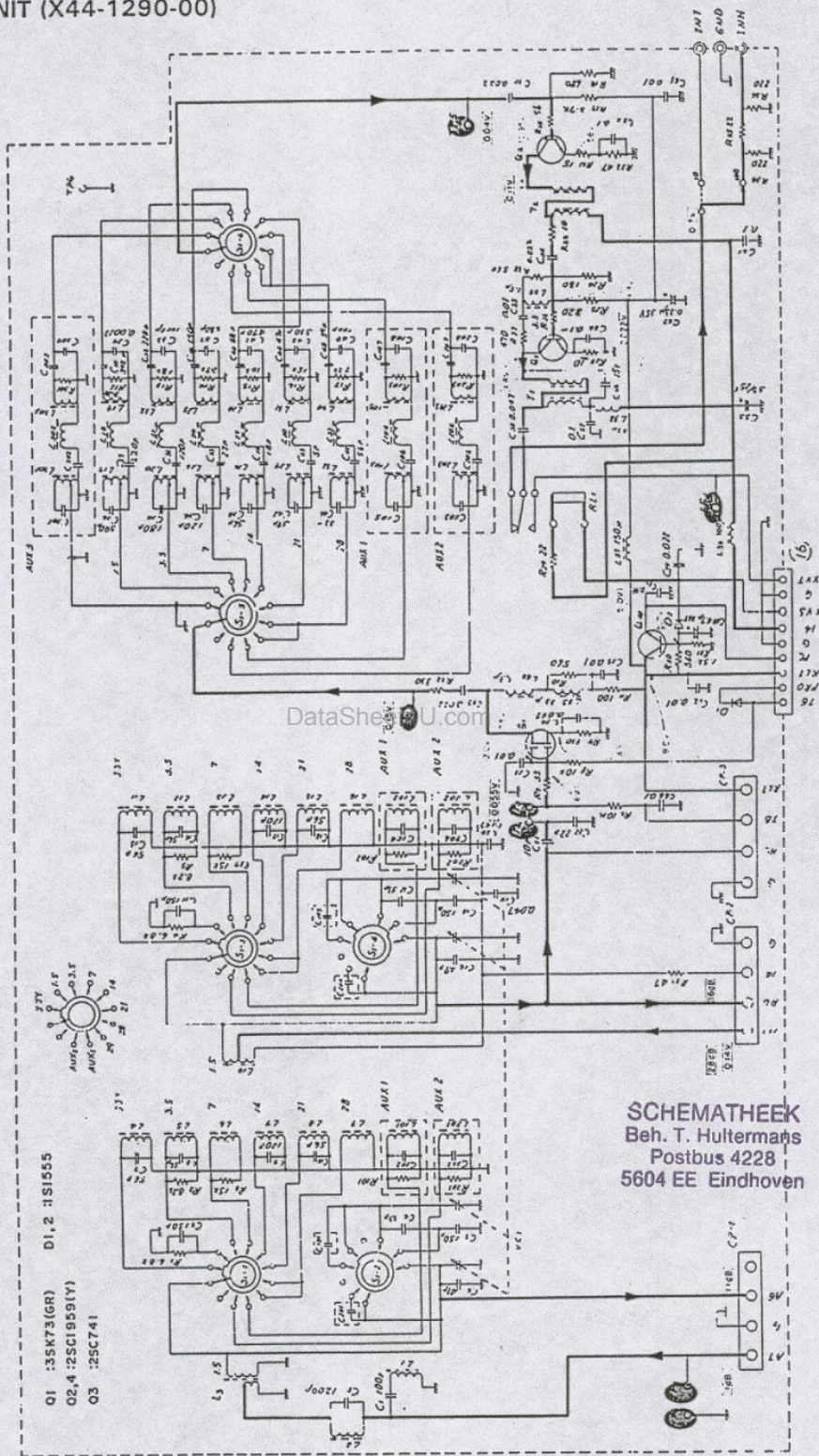
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Not used D1, 15, 20 (K) type
Not used D13, 20 (W)(T)(X) type



▼ COILPACK UNIT (X44-1290-00)

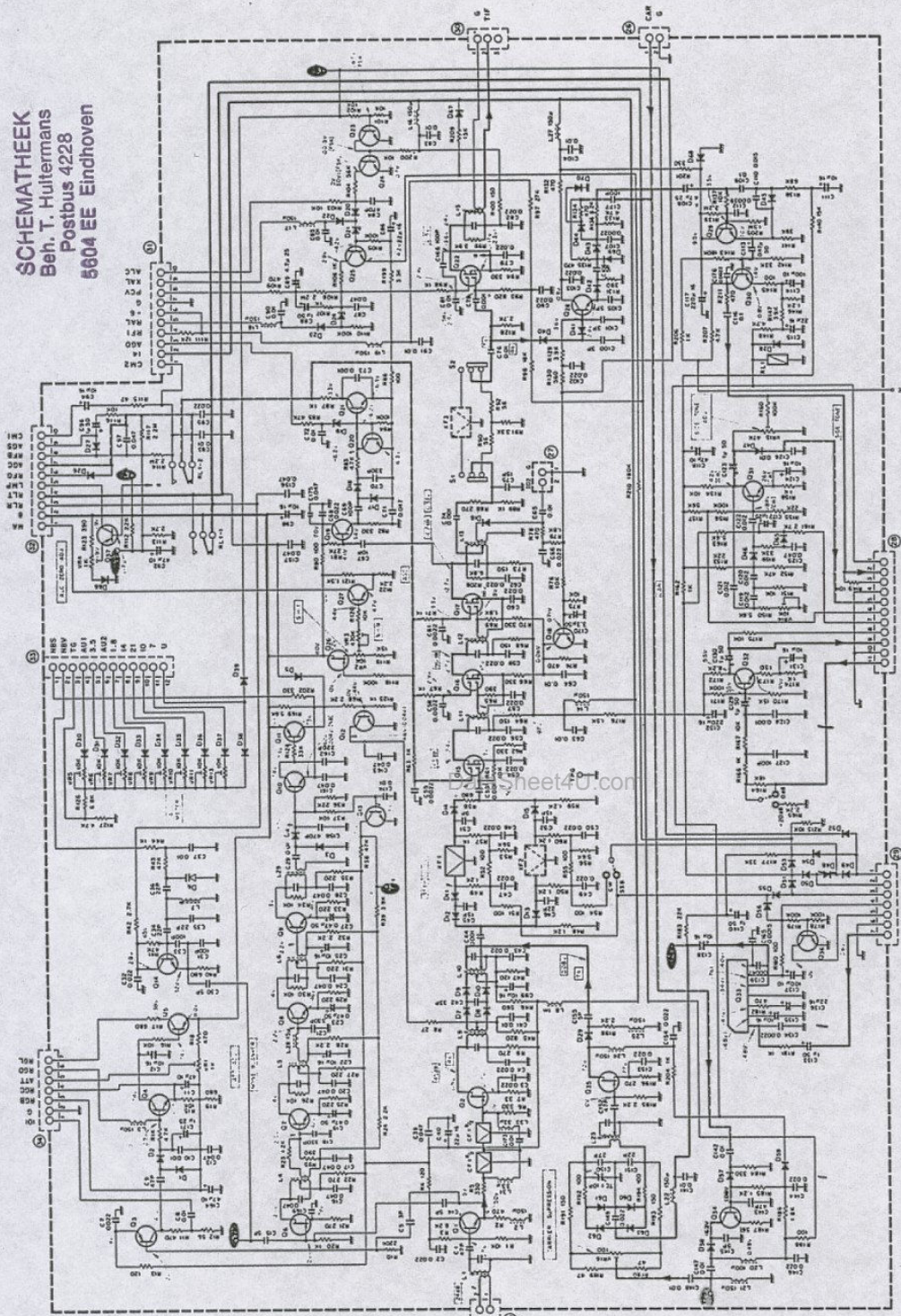


- Q1 :5SK73(GR)
- Q2,4 :2SC1999(Y)
- Q3 :2SC741

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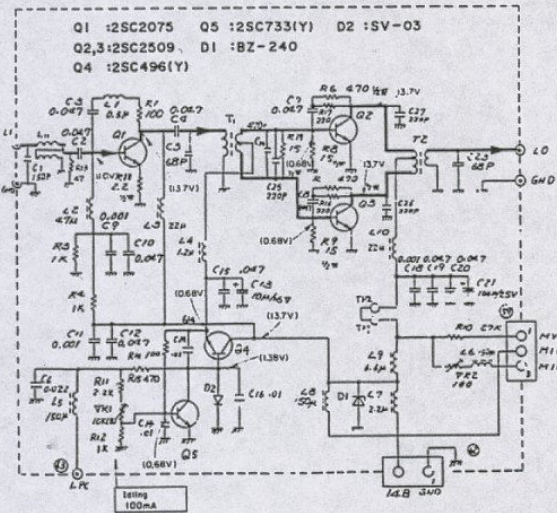
▼ IF UNIT (X48-1240-11)

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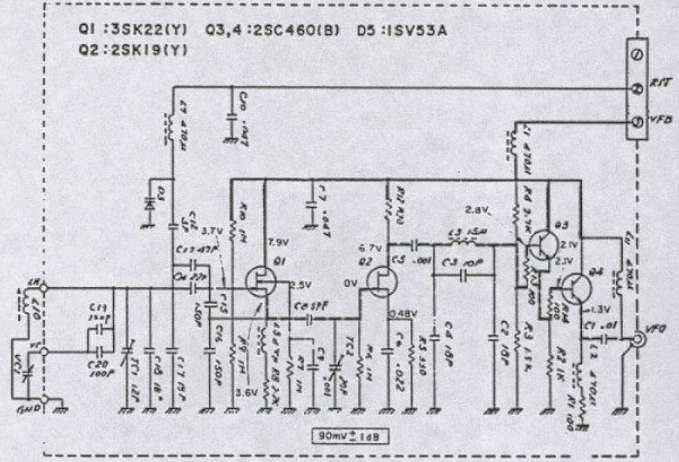


| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 6X4, 6X5, 6X6, 6X7, 6X8, 6X9, 6X10, 6X11, 6X12, 6X13, 6X14, 6X15, 6X16, 6X17, 6X18, 6X19, 6X20, 6X21, 6X22, 6X23, 6X24, 6X25, 6X26, 6X27, 6X28, 6X29, 6X30, 6X31, 6X32, 6X33, 6X34, 6X35, 6X36, 6X37, 6X38, 6X39, 6X40, 6X41, 6X42, 6X43, 6X44, 6X45, 6X46, 6X47, 6X48, 6X49, 6X50, 6X51, 6X52, 6X53, 6X54, 6X55, 6X56, 6X57, 6X58, 6X59, 6X60, 6X61, 6X62, 6X63, 6X64, 6X65, 6X66, 6X67, 6X68, 6X69, 6X70, 6X71, 6X72, 6X73, 6X74, 6X75, 6X76, 6X77, 6X78, 6X79, 6X80, 6X81, 6X82, 6X83, 6X84, 6X85, 6X86, 6X87, 6X88, 6X89, 6X90, 6X91, 6X92, 6X93, 6X94, 6X95, 6X96, 6X97, 6X98, 6X99, 6X100 | 25C-400101 | 25C-400102 | 25C-400103 | 25C-400104 | 25C-400105 | 25C-400106 | 25C-400107 | 25C-400108 | 25C-400109 | 25C-400110 | 25C-400111 | 25C-400112 | 25C-400113 | 25C-400114 | 25C-400115 | 25C-400116 | 25C-400117 | 25C-400118 | 25C-400119 | 25C-400120 | 25C-400121 | 25C-400122 | 25C-400123 | 25C-400124 | 25C-400125 | 25C-400126 | 25C-400127 | 25C-400128 | 25C-400129 | 25C-400130 | 25C-400131 | 25C-400132 | 25C-400133 | 25C-400134 | 25C-400135 | 25C-400136 | 25C-400137 | 25C-400138 | 25C-400139 | 25C-400140 | 25C-400141 | 25C-400142 | 25C-400143 | 25C-400144 | 25C-400145 | 25C-400146 | 25C-400147 | 25C-400148 | 25C-400149 | 25C-400150 | 25C-400151 | 25C-400152 | 25C-400153 | 25C-400154 | 25C-400155 | 25C-400156 | 25C-400157 | 25C-400158 | 25C-400159 | 25C-400160 | 25C-400161 | 25C-400162 | 25C-400163 | 25C-400164 | 25C-400165 | 25C-400166 | 25C-400167 | 25C-400168 | 25C-400169 | 25C-400170 | 25C-400171 | 25C-400172 | 25C-400173 | 25C-400174 | 25C-400175 | 25C-400176 | 25C-400177 | 25C-400178 | 25C-400179 | 25C-400180 | 25C-400181 | 25C-400182 | 25C-400183 | 25C-400184 | 25C-400185 | 25C-400186 | 25C-400187 | 25C-400188 | 25C-400189 | 25C-400190 | 25C-400191 | 25C-400192 | 25C-400193 | 25C-400194 | 25C-400195 | 25C-400196 | 25C-400197 | 25C-400198 | 25C-400199 | 25C-400200 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|

▼ 10 W FINAL UNIT (X56-1330-00)

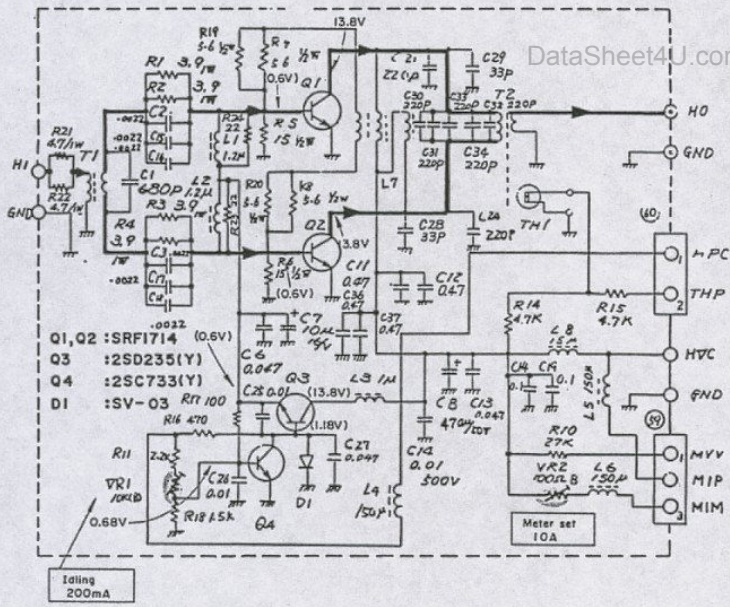


▼ VFO UNIT (X40-1140-00)



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▼ 100 W FINAL UNIT (X56-1340-00)



M

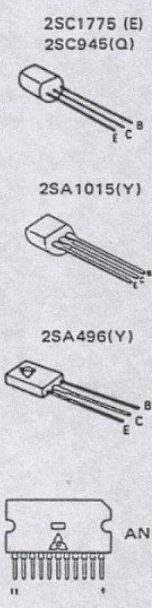
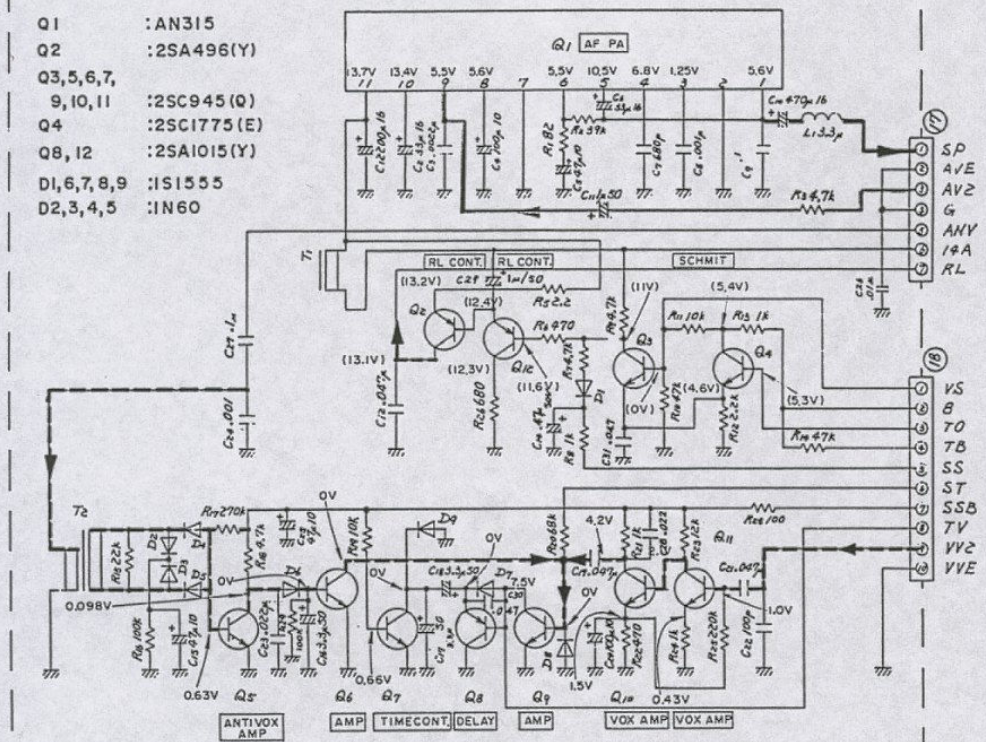
N

O

P

▼ AF VOX UNIT (X49-1130-00)

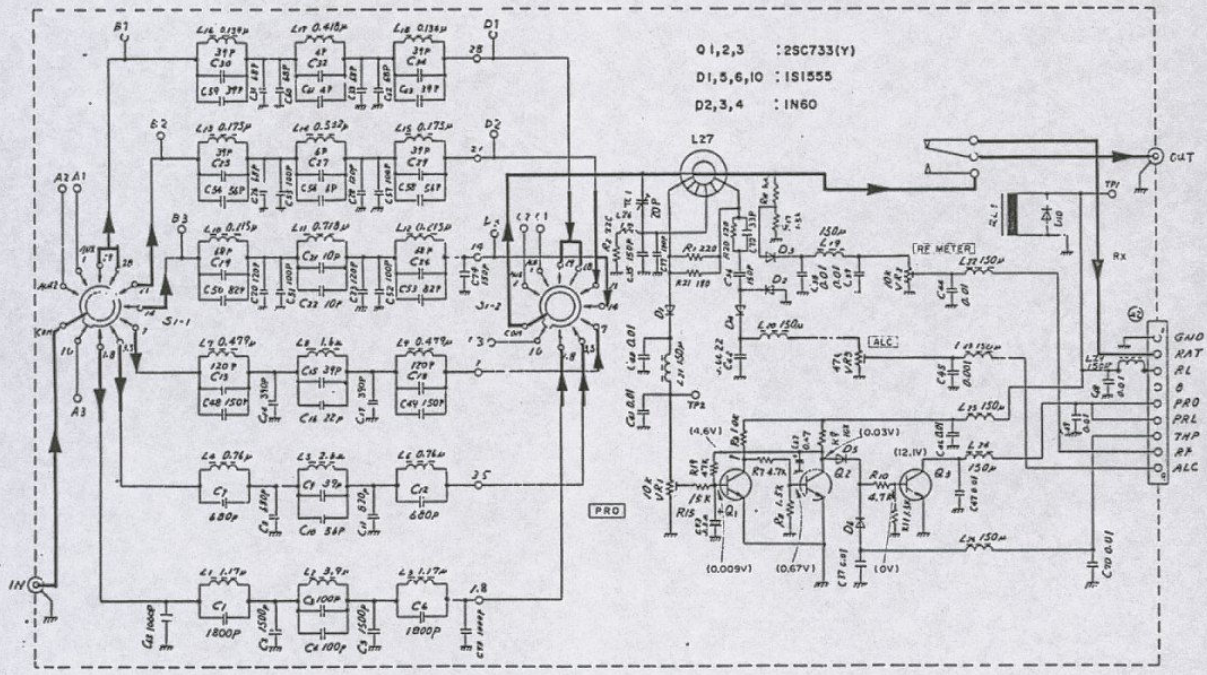
- Q1 : AN315
- Q2 : 2SA496(Y)
- Q3,5,6,7, 9,10,11 : 2SC945(Q)
- Q4 : 2SC1775(E)
- Q8,12 : 2SA1015(Y)
- D1,6,7,8,9 : 1S1555
- D2,3,4,5 : 1N60



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▼ LPF UNIT (X51-1180-00)

- Q1,2,3 : 2SC733(Y)
- D1,5,6,10 : 1S1555
- D2,3,4 : 1N60

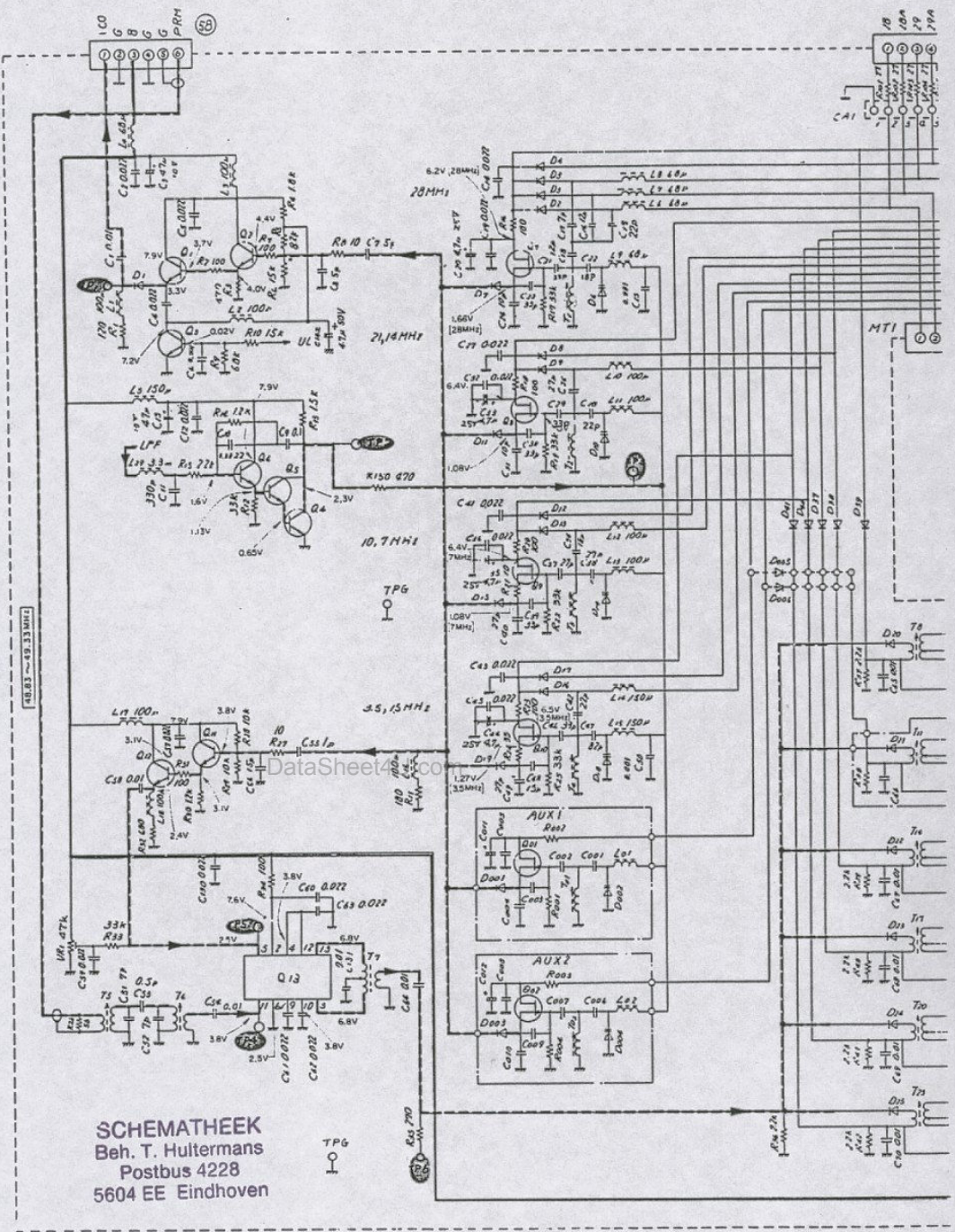


TS-180S

KENWOOD

A

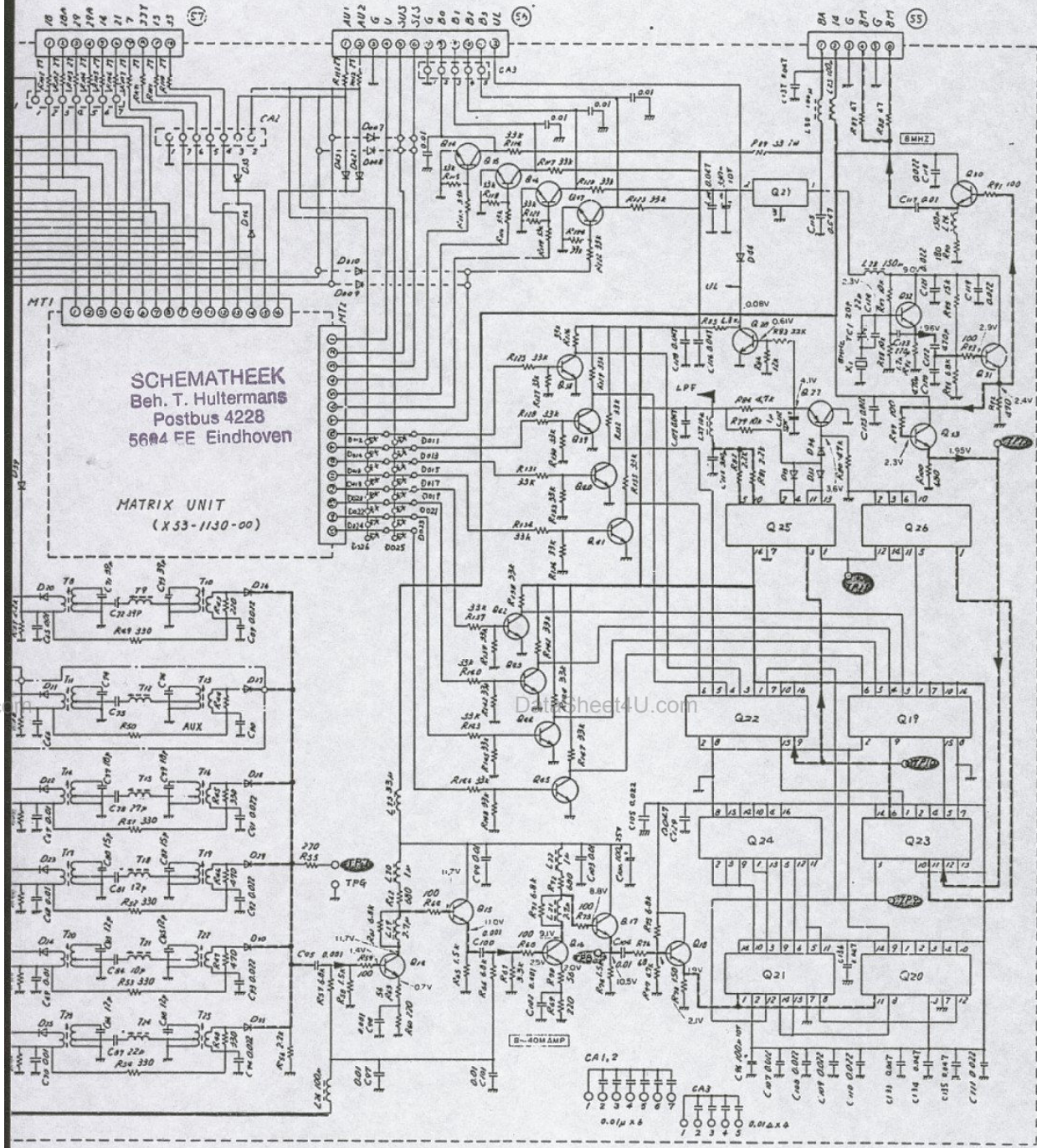
- ▼ PLL ASS'Y UNIT (X60-1120-00)
- ▼ PLL UNIT (X50-1560-00)



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| | | |
|---------------------------|--|--|
| Q01, 02, 8-10 : 2SK19(GR) | Q4-6 : 2SC1775(E) | Q19, 22 : SN74LS163N or HD74LS163P or 74LS16 |
| Q1, 2, 14, 16 : 2SC1907 | Q7 : 2SK19(BL) | Q20 : SN74S74N or HD74S74 |
| Q3, 28 : 2SC945(Q) | Q11, 12, 15, 17, 18, 31-33 : 2SC460(B) | Q21 : SN74S00N or HD74S00 |
| | Q13 : SN76514N | Q23 : SN74LS00N or HD74LS00P or 74LS00 |
| | | Q24 : SN74S112N or HD74S112 |
| | | Q25 : MC4044P |

A



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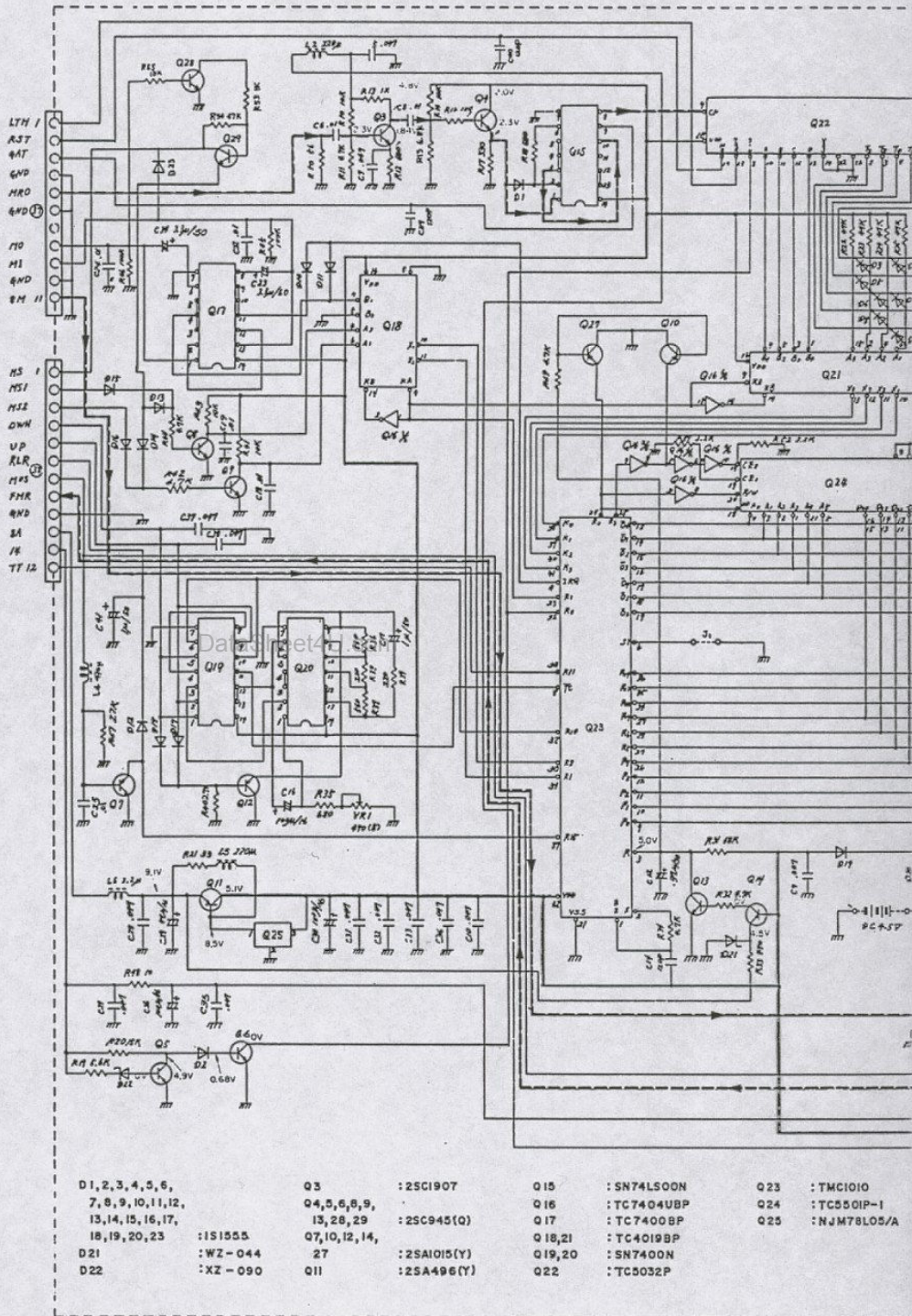
MATRIX UNIT
(X 53-1130-00)

| | | | | |
|----------------|--|--------|-----------------|---------------|
| 3P or 74LS163N | Q26 :SN74LS93N or HD74LS93P or 74LS93N | D1~3 | D4, 7 | D6, 10, 14 |
| or 74LS00N | Q27 :2SA1015(Y) | 5, 9 | 8, 11 | 18, 002 |
| | Q29 :FS 7805 | 13, 16 | 12, 15 | 004 :15V53A |
| | Q30 :25CI959(Y) | | 17, 19 | D20, 22-26 |
| | | | 32~44 | 28~31 :151587 |
| | | | 001, 003 | |
| | | | 005-026 :151555 | |

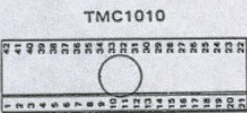
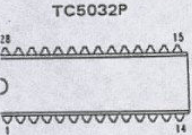
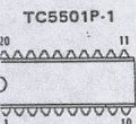
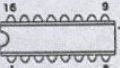
B

▼ MEMORY ASS'Y UNIT (X60-1090-00)
 ▼ CONTROL UNIT (X53-1100-00)

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TC4518BP
 TC9122P
 TC4019BP



B

M

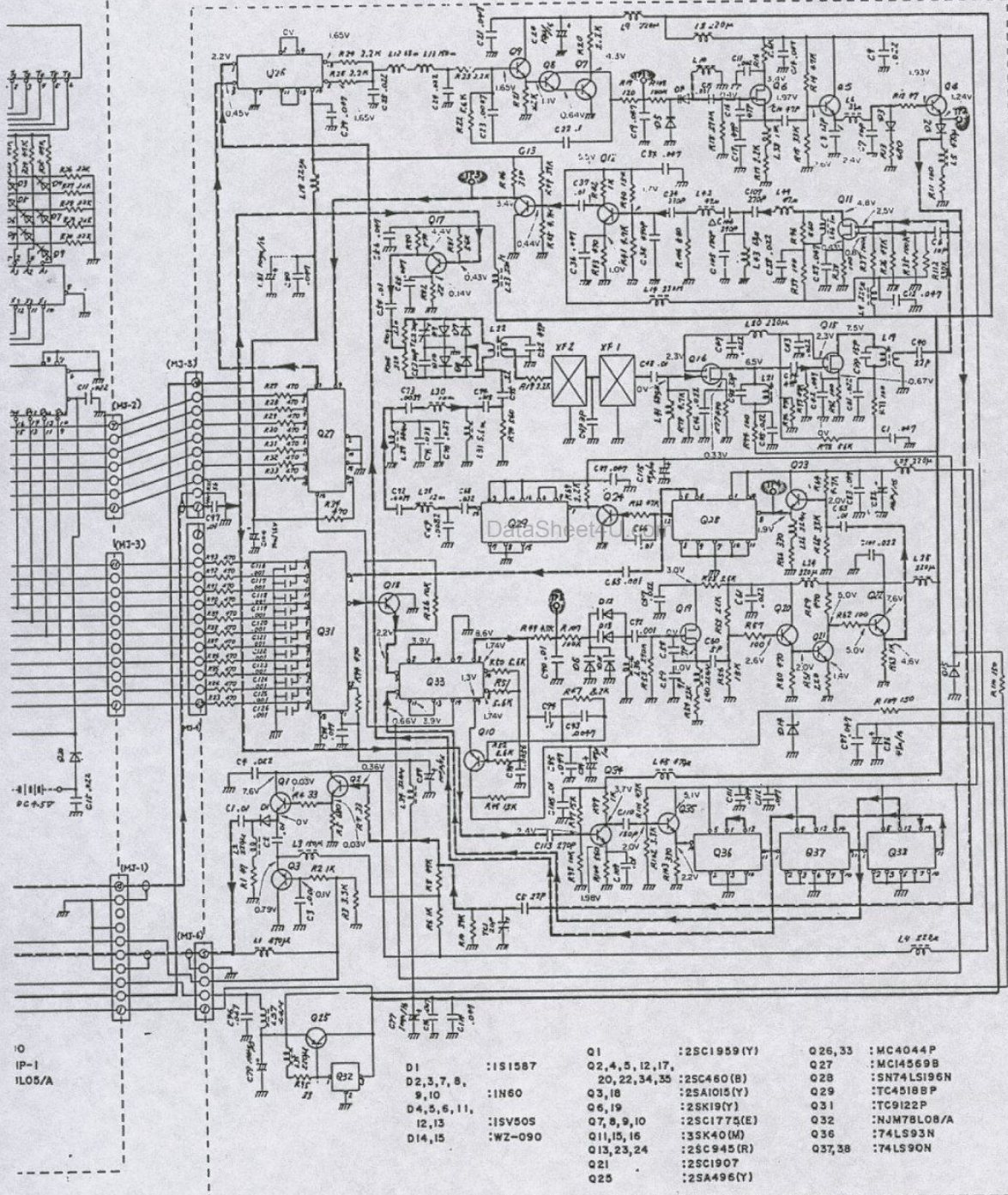
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P

▼ VCO UNIT (X50-1550-00)

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| | | | | | |
|----------------------|----------|----------------------------------|--------------|---------|--------------|
| D1, 3, 7, 8, 9, 10 | : 1S1587 | Q1 | : 2SC1959(Y) | Q26, 33 | : MC4044P |
| D4, 5, 6, 11, 12, 13 | : 1S9505 | Q2, 4, 5, 12, 17, 20, 22, 34, 35 | : 2SC460(B) | Q27 | : MC14569B |
| D14, 15 | : WZ-090 | Q3, 18 | : 2SA1015(Y) | Q28 | : SN74LS196N |
| | | Q6, 19 | : 2SK19(Y) | Q29 | : TC4518BP |
| | | Q7, 8, 9, 10 | : 2SC1775(E) | Q31 | : TC9122P |
| | | Q11, 15, 16 | : 3SK40(M) | Q32 | : NJM78L09/A |
| | | Q13, 23, 24 | : 2SC945(R) | Q36 | : 74LS93N |
| | | Q21 | : 2SC1907 | Q37, 38 | : 74LS90N |
| | | Q25 | : 2SA496(Y) | | |

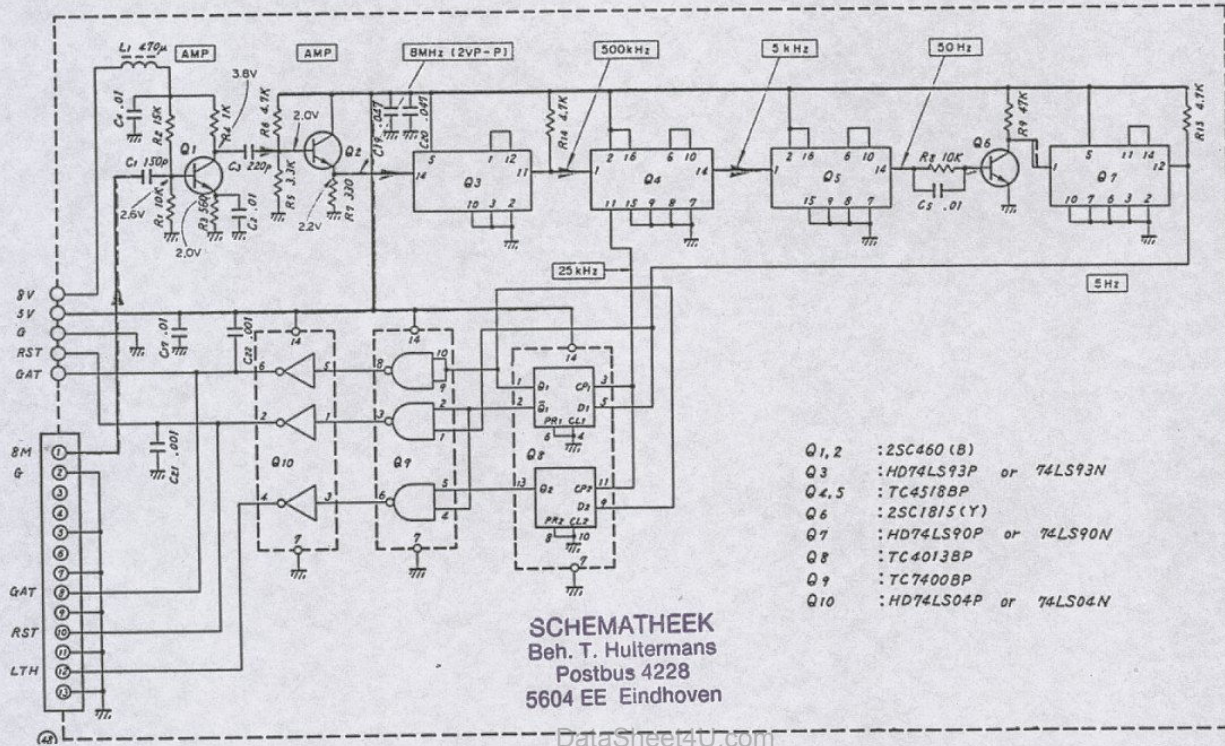
E

F

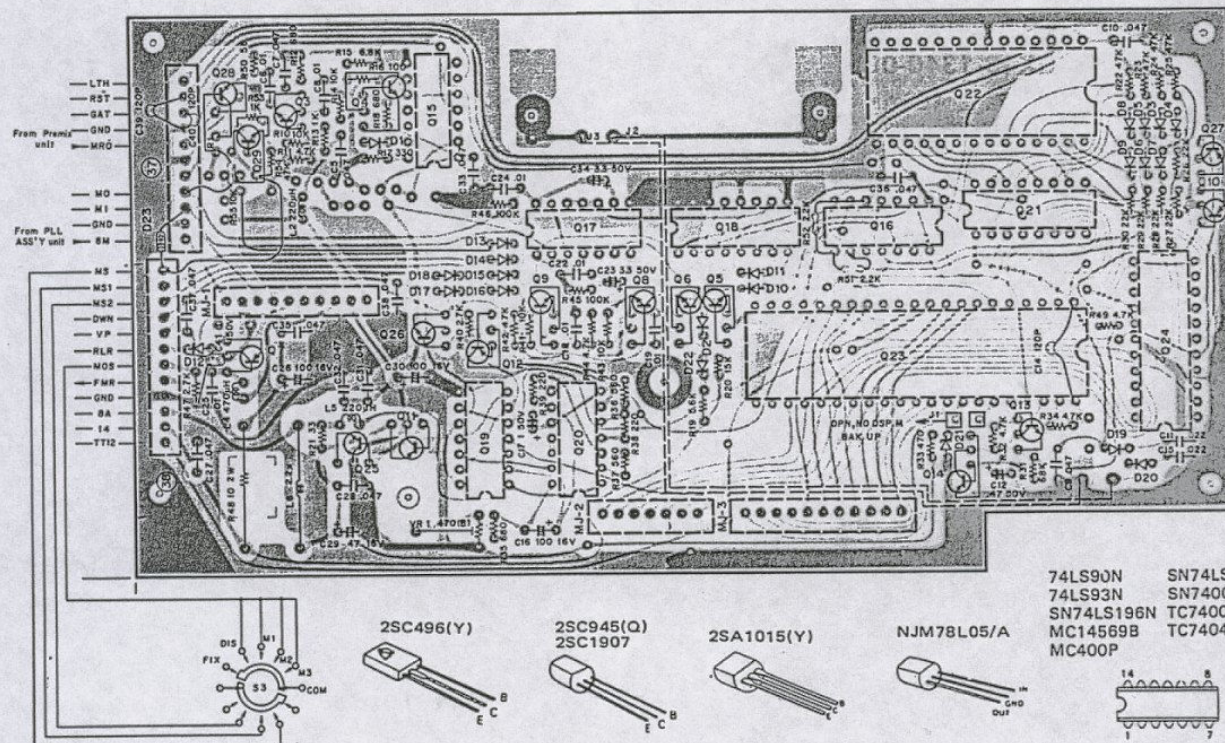
G

H

▼ COUNTER ASS'Y UNIT (X60-1100-00)
 ▼ DIVIDE UNIT (X54-1420-00)

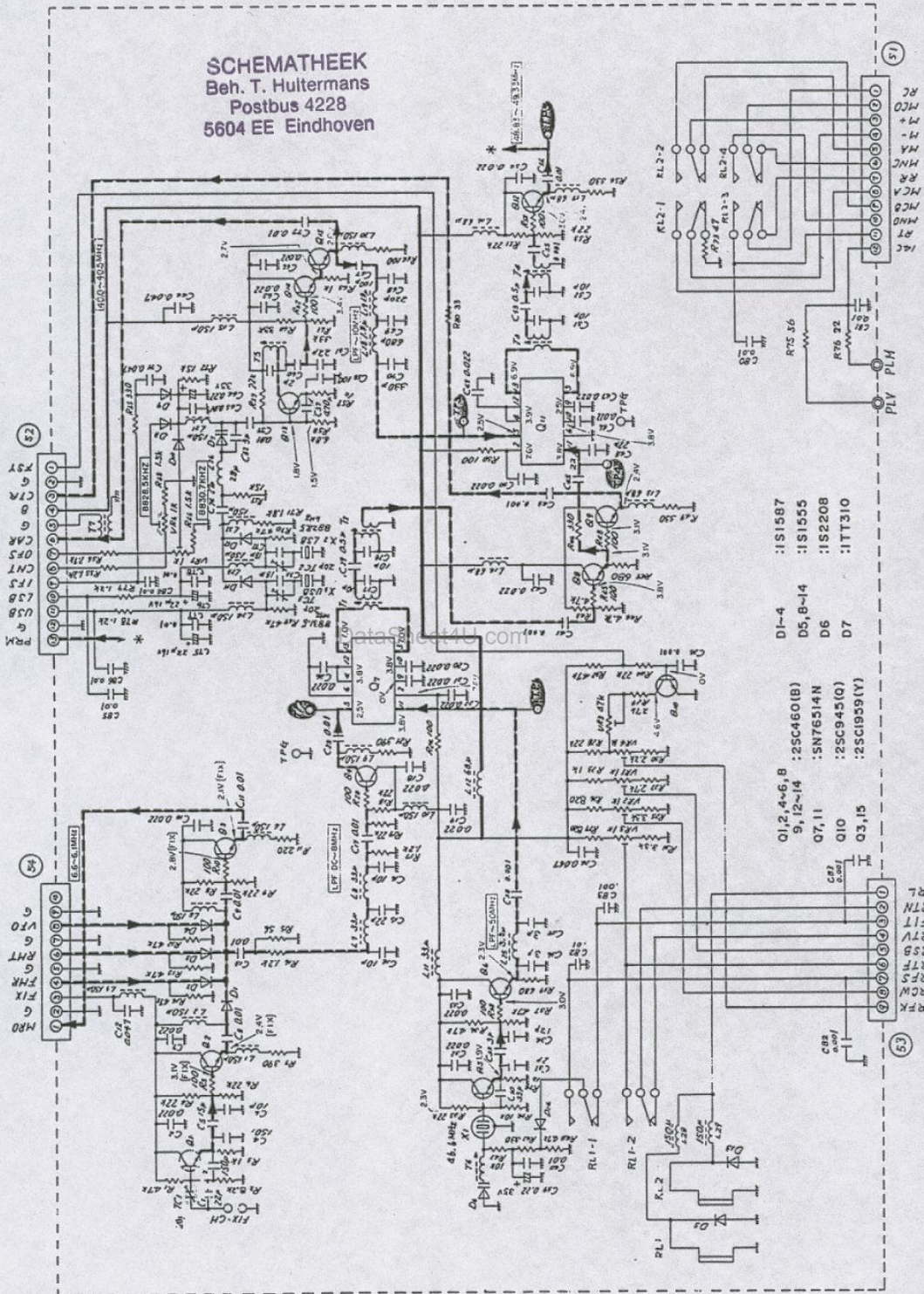


▼ CONTROL UNIT (X53-1100-00)



▼ PREMIX UNIT (X50-1570-00)

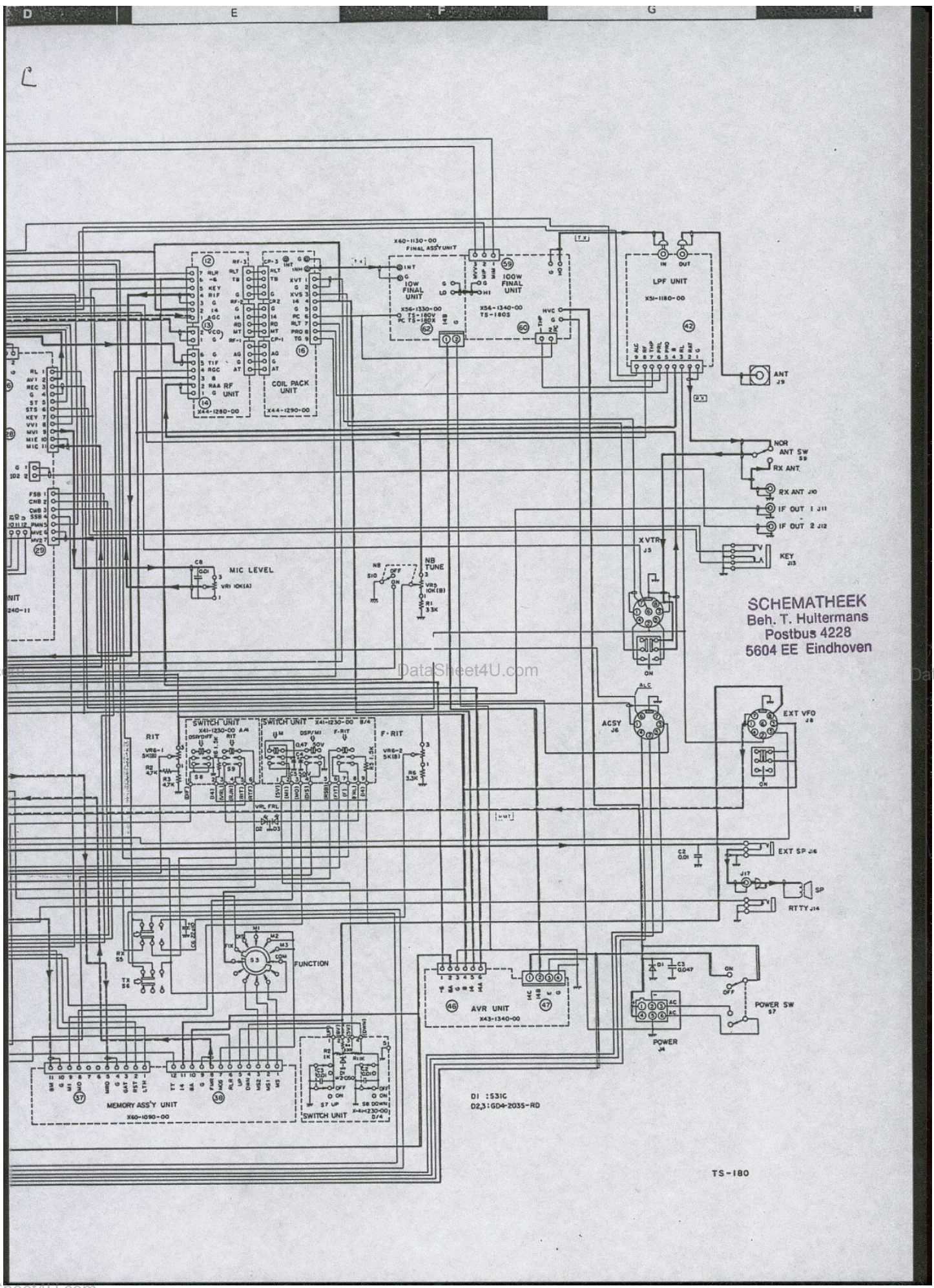
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- D1-4 :1S1587
- D5,8-14 :1S1855
- D6 :1S2208
- D7 :1TT310

- Q1,2,4-6,8 :25C460(B)
- 9,12-14 :SN76514N
- Q7,11 :1S2208
- Q10 :25C945(Q)
- Q3,15 :25C1959(Y)

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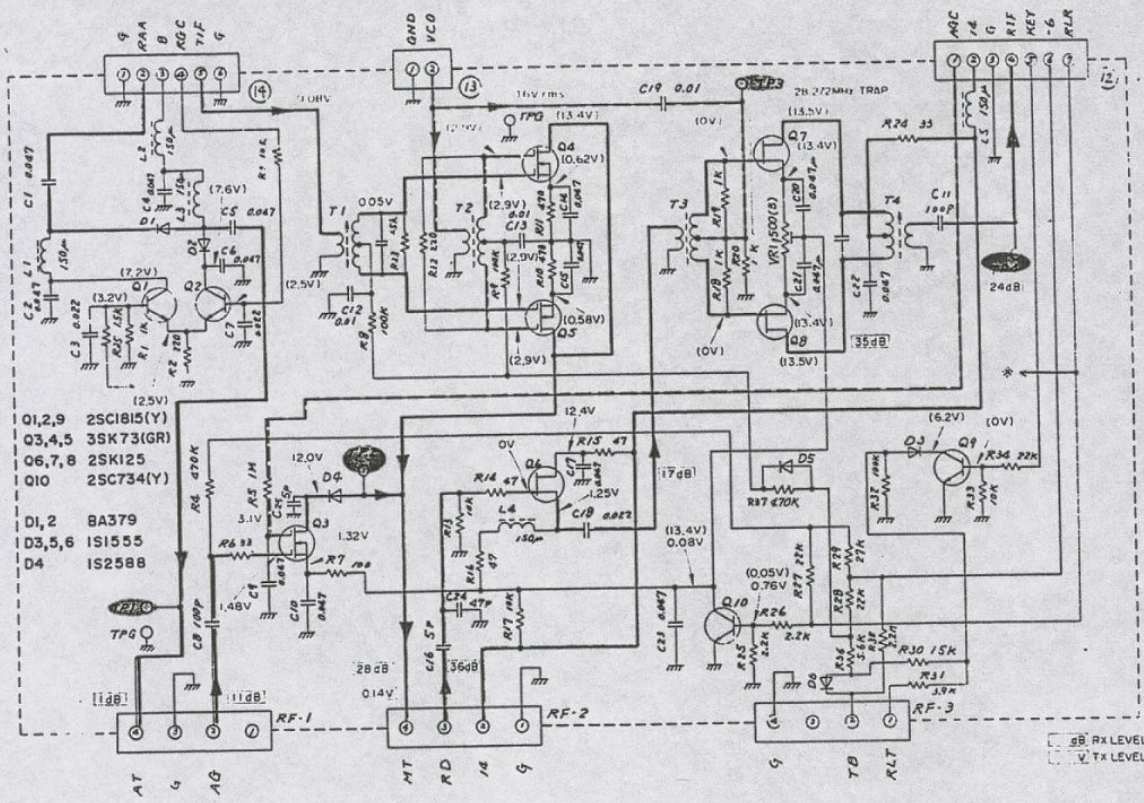
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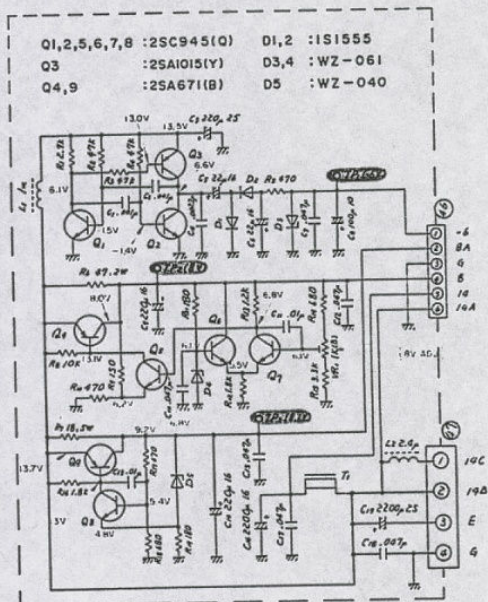
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▼ AVR UNIT (X43-1340-00) PARTS LIST: Page 40



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