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Geveke Elektronica bv

July 1975

MOTORCONTROL MODEL 33
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Products : Teletype 30 Series, Model 33

Category : TG

Kit No. : MKT/MCA/02

Modification : Motorcontrol for Teletype model 33 with UCC6.

1. GENERAL

This modification provides motorcontrol for Teletype model 33 equipped with call control unit UCC6. Modification means mounting of circuit card GEA-400.
The GEA-400 motorcontrol consists of two sections. The first section controls the motor of model 33. Any incoming signal (on-line operation) starts the motor and after a certain delay, when no further data transfer takes place, the motor stops automatically. This delay can be adjusted from abt. 50 seconds to abt. 10 minutes. The same operation applies to the distributor-circuit. Any data handling keeps motor running. Manual start of the motor has been provided too.
The second section prevents data handling during the starting-up time of the motor. In abt. 400 msec. the motor reaches its normal speed. The circuit suppresses all incoming and outgoing data during 390 msec.
That means: when a message is sent to the model 33 (with motor in stop-condition) the first start bit starts the motor and the suppressing circuit. When the fourth data character has been completed, the suppression time is over. The sixth data character enters the model 33 as the first character to be used as normal data.
Note: The same circuit suppresses the normal BREAK-function when the BREAK-key is pressed (e.g. for manual start). When the motor is running this key performs its normal function.

2. DOCUMENTATION REQUIRED

For standard wiring information: see Teletype diagram set WDP 0320.

3. THEORY OF OPERATION (see figure MKT/MCA/02/1)

Each timing circuit generally consists of a flipflop that is set by a trigger imput and reset by a threshold input. The trigger is actuated by a voltage drop or a negative going pulse, the threshold input resets the flipflop when its voltage rises to Vb. These two inputs are compared internally to a fixed voltage level for an accurate setting and resetting point. By means of the control input this level is adjustable.
Timing circuits I and II can be triggered (inputs 6 and 8) from:
- distributor circuit. The input circuit of light coupler IC3 has been connected in series with the distributor, break key and the Teletype-outputs (keyboard, reader and answer back in parallel).
- SMD input circuit. The input circuit of light coupler IC4 has been connected in series with the Teletype SMD input circuit.
- Manual start.

A space in the distributor- or SMD-input-circuit turns off the light coupler

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IC3 or -IC4. This causes T1 or T2 to conduct and this negative going pulse triggers timers I and II.
The same effect happens when pushing the "Manual Start"-button. The output of timer I (pin 5) goes high and blocks (via D5) the trigger input of timer II. D6 turns off and C4 discharges via RV2 and R12: the threshold input of timer II (pin 12) rises to Vb.
When timer II is on, relay RLB/1 is energized via pin 9 of timer II. By means of relay-contact RLB1 the SMD power transistor is shortened and no printing operation is possible. After 390 msec. timer II switches off because pin 12 reaches the threshold level. This 390 msec. can be adjusted with RV2.
Triggering of timer II has been blocked (via D5) until timer I switches off. D6 also blocks recharging of C4. This combination avoids unattended operation of timer II during normal operation of the model 33.
When timer I is on, the discharge output (pin 1) is switched off. This enables C2 to charge via RV1 and R5. Each incoming space, however, turns on T3 and so C2 discharges again. When no new spaces enter the circuit, the charging level reaches the resetting point and the timer I is switched off. The internal discharge circuit (pin 1) discharges C2 now and prepares the timer for new operation C4 is recharged via D6 and the low output (pin 5) of timer I.
When timer I is triggered and output pin 5 becomes high transistor T4 is turned on and relay RLA/1 is energized.
Relay-contact RLA1 provides 115 VAC to the motor circuit.

Note 1: The threshold input level is about 2/3 Vb. The charging time for C2 can be adjusted with RV1.
Note 2: Application of the MCA/02 motorcontrol means a fixed polarity of the transmitted signal, i.e. terminal strip X : X3 positive and X4 negative.
Note 3: The inputs of lightcouplers IC3 and IC4 have been connected in series with the input- and outputcircuit of the equipment connected to the Teletype. Because of diversity in these circuits it may happen that a lightcoupler doesn't receive an inputcurrent within its specifications. For instance sometimes R8 and/or R10 may be shortened.

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4. MODIFICATION KIT CONTENTS

Quantity	Part No.	Description
1	GEA 400	circuit card
1	143-022-01-110	card connector, Amphenol, 22-pins, with mounted wiring
1		bracket with mounting hardware
1	151680-0 Amp	connector, 2-pins
1	151679-0 Amp	connector, 2-pins with mounted wiring
1	1.01001	pushbutton "Rafi"
2		insulation, yellow, length 1 cm.
1		wire, pink, length 4 cm.
1		text-frame "Motor Start"
4	163304-2 Amp	terminal female
1	1-480349-0 Amp	connector 1-pins

5. INSTALLATION (See figure MKT/MCA/02/2)

5.1 Disconnect the mains supply.
5.2 Remove the Teletype cover.
5.3 Remove call control unit UCC6 (not required).
5.4 Mount the bracket with belonging screws to call control unit UCC6. This can be done at the left side in front of the baseplate. Therefore capacitor 181814 TTY must be turned into another position (remove the left screw 181241 TTY). Screw 181241 TTY of resistor 181816 is used to mount the bracket.
5.5 If required: place the link between T and U of the card connector for half duplex operation. Use the pink wire and the insulation tube.
5.6 Mount the 22-pins card connector with belonging screws to the bracket.
5.7 Remove orange wire between P7-10 and P8-10 of the UCC6.
5.8 Connect black wire from P of the card connector to P7-10.
5.9 Connect white wire from S of the card connector to P8-10.
5.10 Connect slaight wire from E of the card connector to the 115-VAC connection of the elapse time counter. If there is no elapse time counter the slaight wire must be insulated.
5.11 Connect red wire from B of the card connector to the collector of the SMD Power Transistor (181675 TTY).
5.12 Connect blue wire from C of the card connector to the emitter. Both white-green wire-ends are connected to the blue wire by means of the Amp slide terminal.
5.13 Remove orange wire from L1 of the UCC6 local/line switch.
5.14 Connect orange wire from F of the card connector to the orange wire from P4-3 of the UCC6 (by means of the Amp slide terminal).
5.15 Connect yellow wire from H of the card connector to L1 of the UCC6 local/line switch.
5.16 Remove the two brown-yellow wires from pin 8 of the SMD Molex-connector.
5.17 Connect the purple wire from M of the card connector to pin 8 of the SMD Molex-connector.
5.18 Connect the two brown-yellow wires (see 5.16) to one female terminal 163304-2 Amp and fit this one into connector 1-480351-0 Amp. Connector 1-480349-0 Amp and terminal 163304-2 Amp are enclosed separately.

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5.19 Connect the green wire from K of the card connector to the two brown wires (see 5.18) by means of the 1-pins Amp-connectors.
5.20 Replace call control unit UCC6.
5.21 Mount the pushbutton to the UCC6-faceplate (181910 TTY). Text-frame "Motor Start" has to be placed around the pushbutton.
5.22 Connect the two brown wires to the pushbutton by means of terminals 165143 Amp.
5.23 Connect the orange-white wires from W and X of the card connector to the 12-18 VAC connection. Normally the mains transformer provides 12-18 VAC. Therefore the wiring may be connected by means of two Amp connectors (151680-0 Amp and 151679-0 Amp). Connector 151679-0 Amp and belonging female pins 16304-2 Amp are enclosed separately.
5.24 Insert circuit card GEA 400 (print-key located between A and B).
5.25 Connect wiring from V and Y of the card connector to wiring from the pushbutton "Motor Start" (by means of the 2-pins Amp connectors).
5.26 Replace the Teletype cover.

6. ADJUSTMENTS

6.1 When data handling has been finished still the motor is running some time. This time can be adjusted with RV1 from abt. 1 min. to abt. 10 min.
6.2 The SMD-suppression time can be adjusted with RV2. Adjust RV2 until suppression is released on stopbits of the fifth character (abt. 390 msec.).
NOTE: Because of tolerances in components and diversity in circumstances (temperature!) this adjustment may be adapted per machine.

7. TEST

7.1 Connect mains supply to the model 33 and start the motor by means of the pushbutton "Motor Start", using the keyboard or incoming characters.
7.2 Check whether the first five characters are suppressed completely and the sixth character is printed correctly.
7.3 When data handling has been finished the motor must stop within the time according to the adjustment of RV1.

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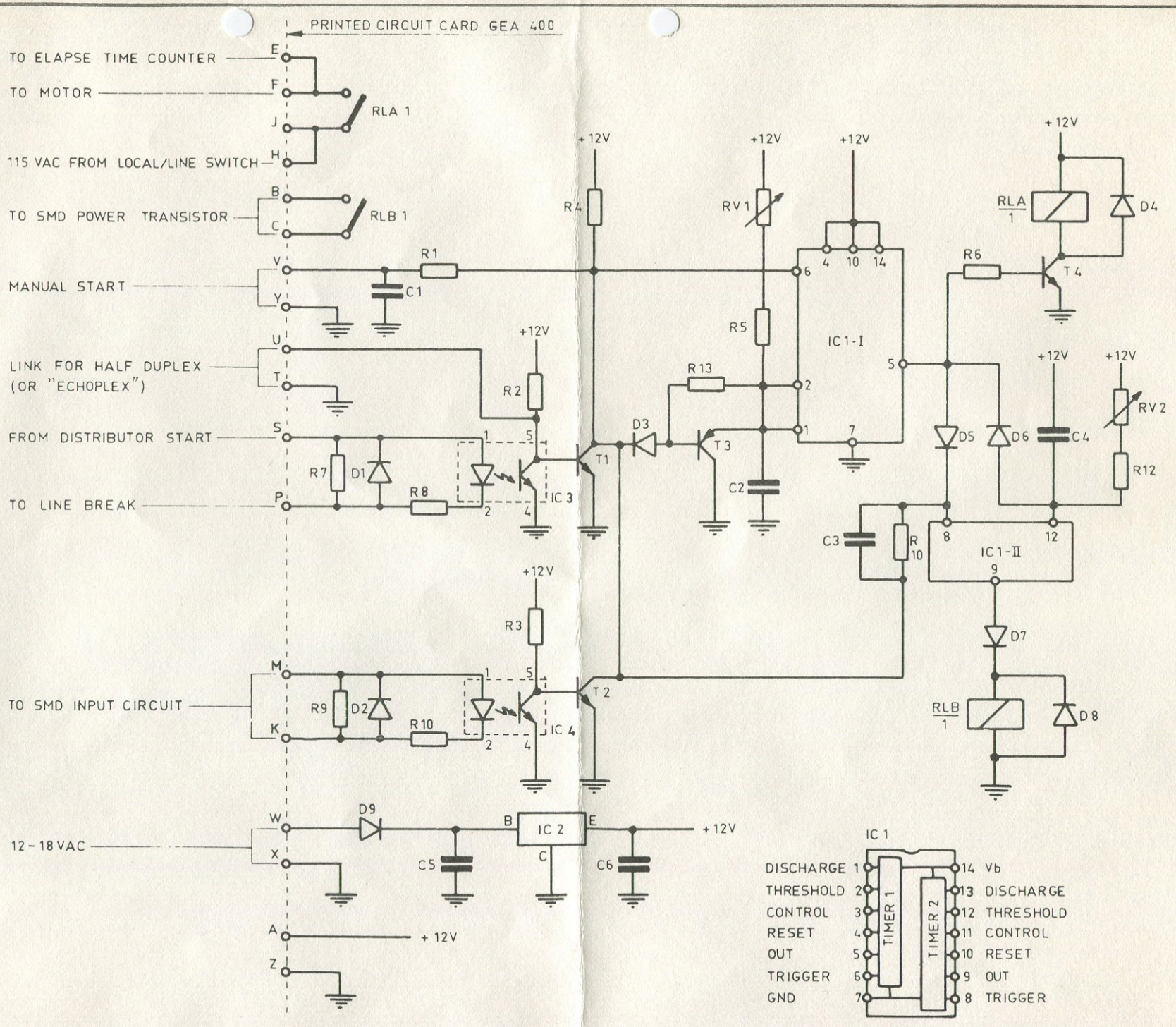
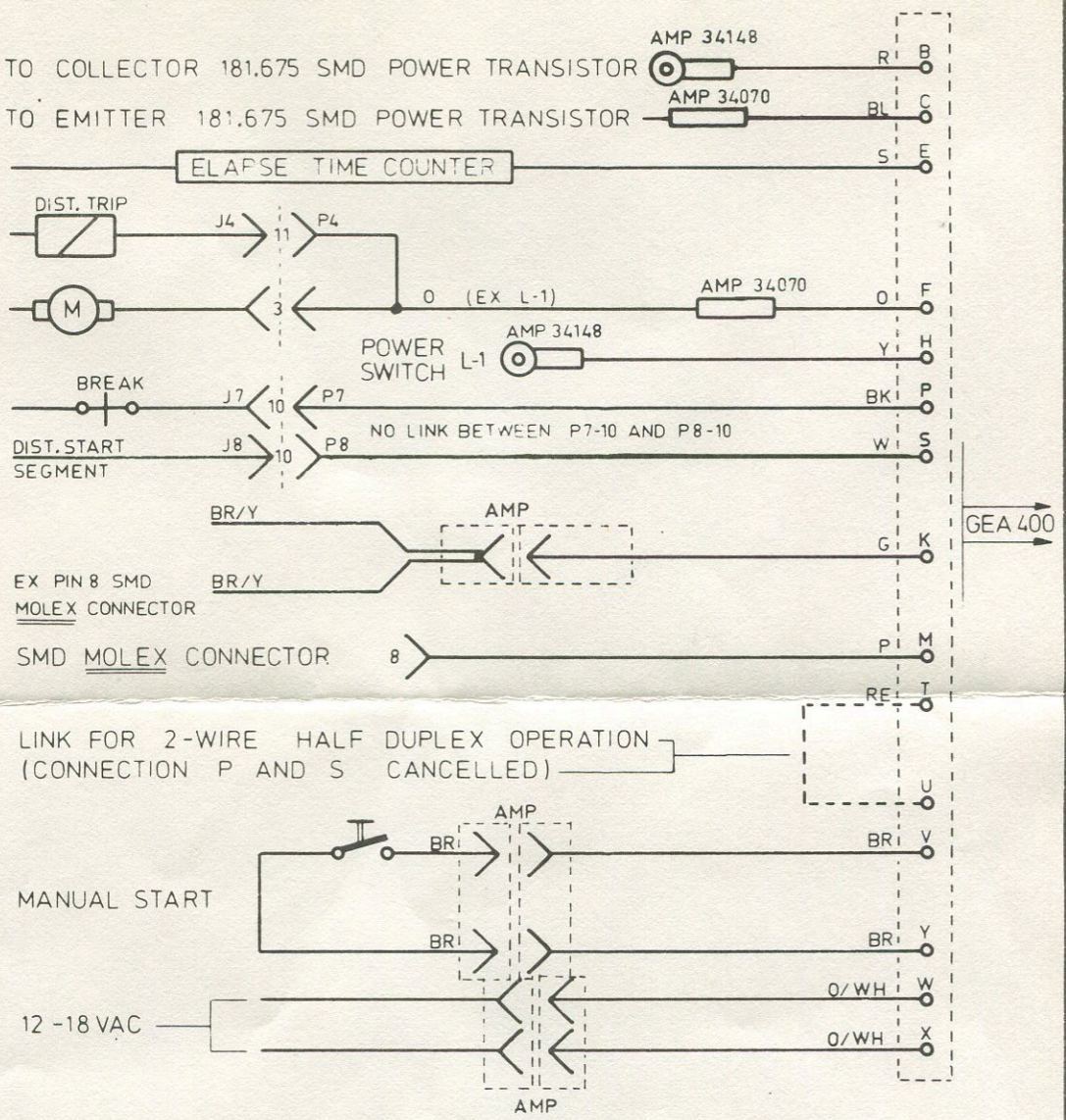
MOTOR CONTROL GEA 400

Datum	Wijz.	Par.	Opm.
28/04/75		T.R.	
15/09/75		T.R.	

Tek.nr. MKT/MCA/02/1





CALL CONTROL UNIT UCC 6 "WIRING DIAGRAM"

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MOTOR CONTROL GEA 400

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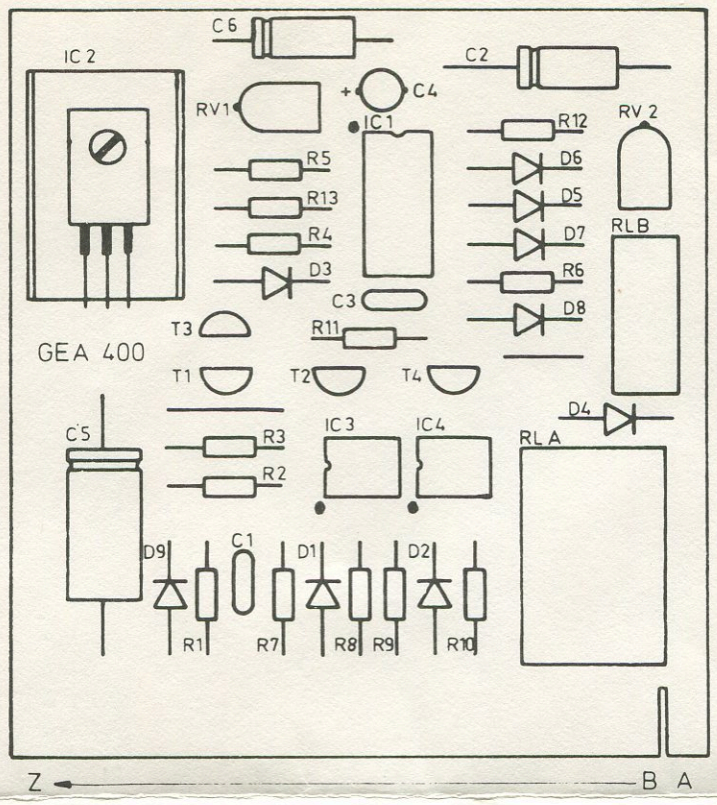
29/04/75		T.R.		MKT/MCA/02/2
15/09/75		T.R.		



COMPONENTS LAYOUT CIRCUIT CARD GEA 400

C1 – 0,01 µF
C2 – 220 µF 16V
C3 – 0,047 µF
C4 – 47 µF 20V TANT.
C5 – 470 µF 25V
C6 – 10 µF 16V
D1 – 1N914
D2 – 1N914
D3 – 1N914
D4 – BYX 36/150
D5 – 1N914
D6 – 1N914
D7 – 1N914
D8 – 1N914
D9 – BYX 36/150

IC1 – NE 556
IC2 – MC 7812CP
IC3 – MCT 2E
IC4 – MCT 2E
RLA – SCHRACK-RU 11012
RLB – NATIONAL– RH 12V
R1 – 1k 1/3 W
R2 – 5k6 1/3 W
R3 – 5k6 1/3 W
R5 – 100k 1/3 W
R6 – 2k2 1/3 W
R7 – 180Ω 1/3 W OR 270Ω 1/3W
R8 – 68Ω 1/3 W
R9 – 180Ω 1/3 W OR 270Ω 1/3W
R4 – 5k6 1/3 W

R10 – 68Ω 1/3 W
R11 – 10k 1/3 W
R12 – 6k8 1/3 W
R13 – 10k 1/3 W
RV1 – 1M LIN.
RV2 – 2k5 LIN.
T1 – BC 171
T2 – BC 171
T3 – BC 252
T4 – BC 171

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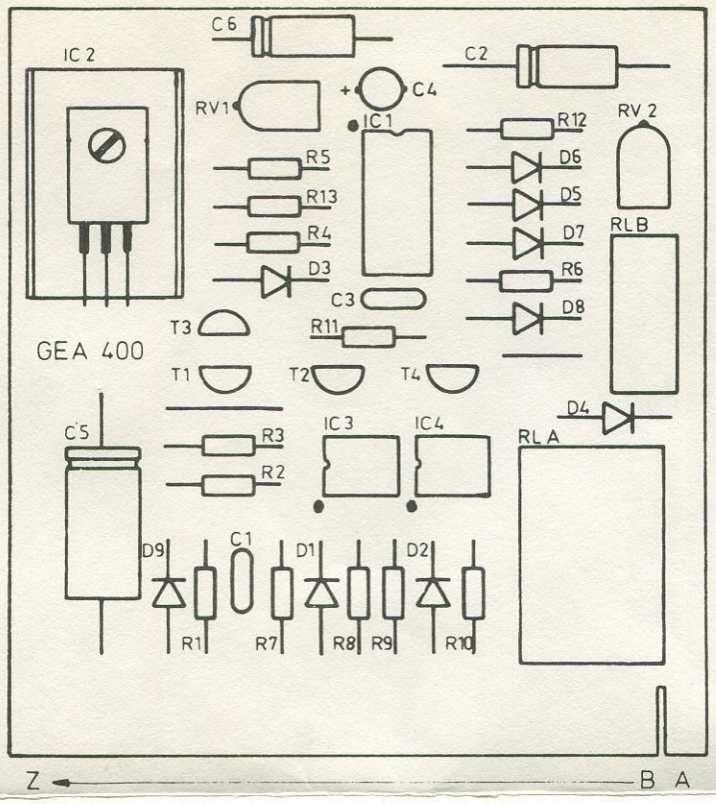
Datum	Wijz.	Par.	Opm.	Tek. nr.
04/04/75		T.R.		MKT/MCA/02/3
25/07/75		T.R.		



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D2 – 1N 914
D3 – 1N 914
D4 – BYX 36/150
D5 – 1N 914
D6 – 1N914
D7 – 1N914
D8 – 1N914
D9 – BYX 36/150

IC1 – NE 556
IC2 – MC 7812CP
IC3 – MCT 2E
IC4 – MCT 2E
RLA – SCHRACK-RU 11012
RLB – NATIONAL– RH 12V
R1 – 1k 1/3 W
R2 – 5k6 1/3 W
R3 – 5k6 1/3 W
R5 – 100k 1/3 W
R6 – 2k2 1/3 W
R7 – 180Ω 1/3 W OR 270Ω 1/3W
R8 – 68Ω 1/3 W
R9 – 180Ω 1/3 W OR 270Ω 1/3W
R4 – 5k6 1/3 W

R10 – 68Ω 1/3 W
R11 – 10k 1/3 W
R12 – 6k8 1/3 W
R13 – 10k 1/3 W
RV1 – 1M LIN.
RV2 – 2k5 LIN.
T1 – BC 171
T2 – BC 171
T3 – BC 252
T4 – BC 171

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