



## User manual

Version 2.1

november 2000

# HA-02

## OPERATION INSTRUCTIONS FORCED AIR CONVECTION OVEN TECHNO-HA/02

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### 1) CONNECTION AND POWER:

The oven is to be installed on a heat resistant floor/background. To power oven, fit main plug of minimum **10 Amp**. When power is switch on, (switch **A** on the front of the control panel) the oven will be start to preheat temperature.

The temperatures and times can be set with the switches **G-H-I-J** at the front panel, and the set basic time(**t1**) and temperature(**°C1**) can be read from the two displays time and temperature.

Basic temperature is selected on the basis of the solderpaste to be used, but will normally range from **140 to 180°C**.

When the oven has completed the preheating phase, the preheat and reflow LED's (**E-F**) will light up in green, instead of red LED indication, accompanied by an acoustic signal.

### 2) THE SOLDERING CYCLE:

The cycle is started by opening the drawer and placing a pc-board in the drawer. This should preferable be done within two minutes. If the drawer is not closed within two minutes, the oven will switch off automatically! When this nevertheless happens, restore by pushing the reset button (**K**). If the soldering process is interrupted by opening the drawer, push the reset button (**K**) and cycle can be restarted from 2).

Time and temperature can be read from the displays. During the final stage of the preheating phase, the oven will maintain the basic set temperature, preheat LED (**E**) is flashing red/green. Upon completion of the preheating time, the reflow time will start, reflow LED (**F**) is flashing red/green. Temperature and time during the reflow period can be read from the displays. After completion of the reflow phase, the oven will emit an acoustic signal indicating that the drawer is to be opened and the pc-board removed. If the drawer is opened, the display will indicate that the drawer should remain open during the cooling period.

Only after temperatures have dropped to basic temperature, the displays indicate to close the drawer, accompanied by an acoustic signal.

The drawer must then be closed without pc-board and the cycle will restart from 2.

### 3) SETTINGS:

To change set times or temperatures, one should press the switches for time and temperature either positively + or negatively - .

The displays will show the previous value set for 1 second, after which this value will change positively or negatively. These set values will remain visible on the displays for two seconds (set value) to subsequently return to process value.

The time value for preheat (**t1**) and reflow (**t2**) can each be adjusted from **0 - 999** seconds.

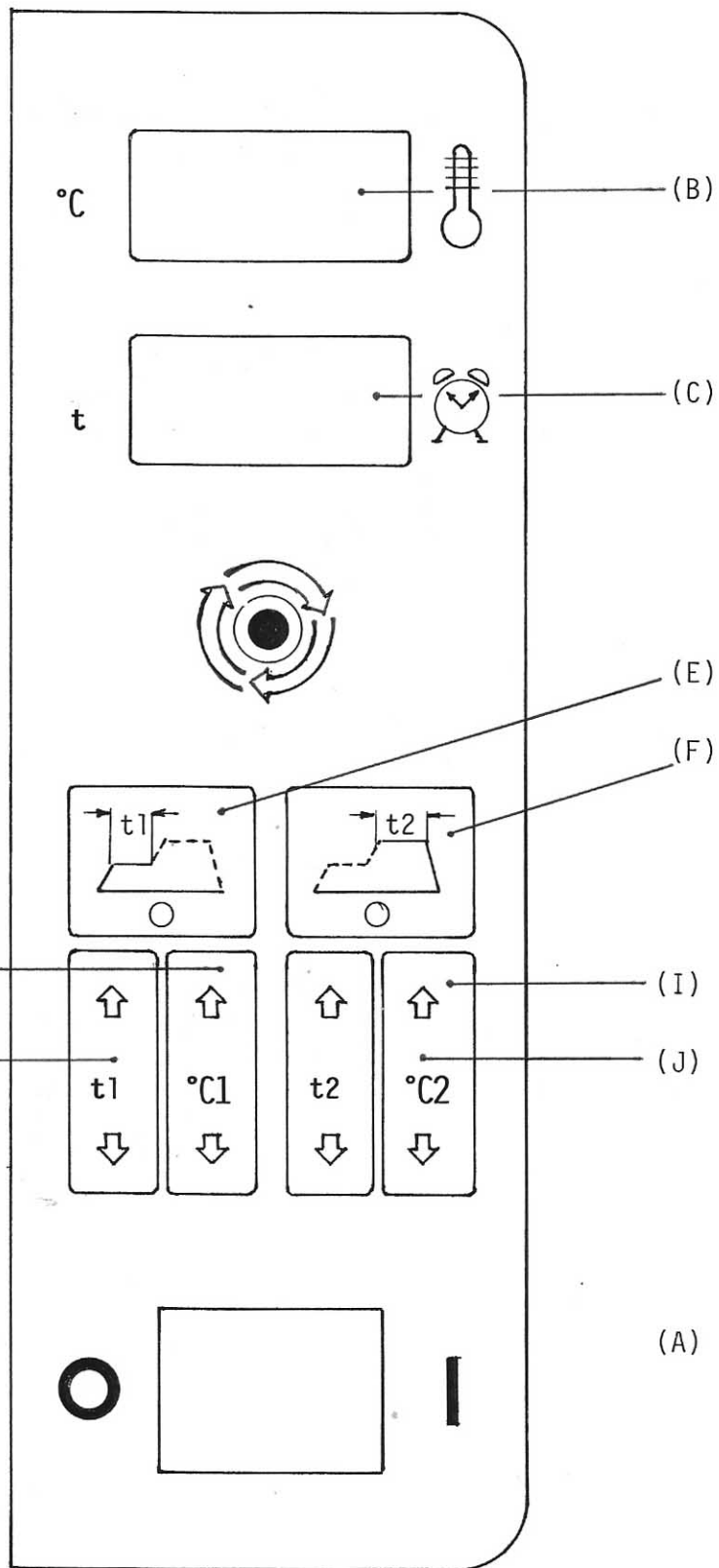
The temperature setting for preheat temperature (**°C1**) is: **60 - 230 °C**.

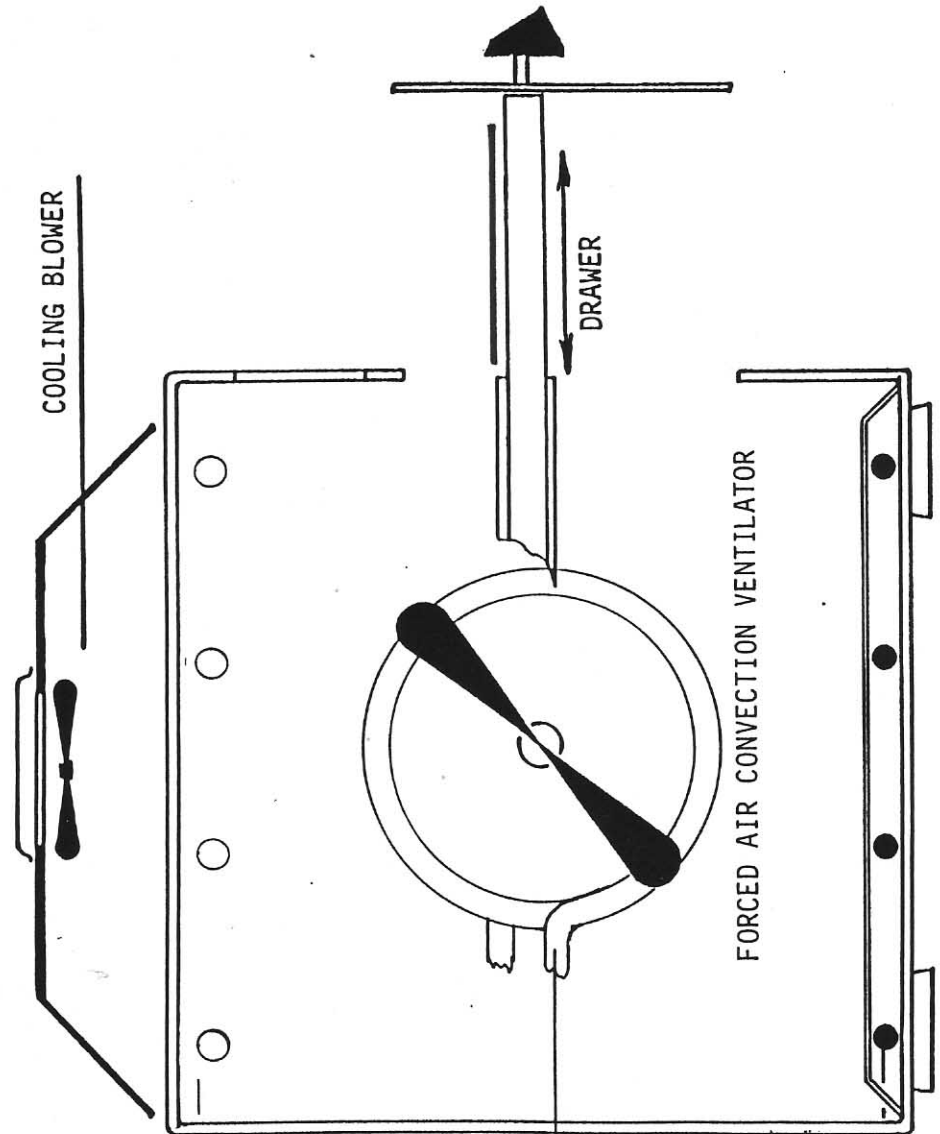
The temperature setting for reflow temperature (**°C2**) is: **90 - 260 °C**.

Note well, that whatever the temperature setting is, there will always be a difference of **30°C**. between preheat and reflow temperatures!

If the oven is not in use for 30 minutes, heating elements switching off automatically. By pressing the reset button (**K**) on the back side of the oven, the oven will start heating up to the set basic temperature.

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COOLING BLOWER

REFLOW QUARTZ HEATERS  
4 x 250 W = 1000 W

PREHEAT ELEMENT  
1250 watts

REFLOW IR-ELEMENT  
550 W

FORCED AIR CONVECTION VENTILATOR

DRAWER

TECHNO-HA/02 REFLOW OVEN WITH INERT GAS CONNECTION  
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When you want to run this reflow oven with inert gas, be sure that you are working with non toxic or non explosive gas.(N<sub>2</sub>)

The flowmeter on this oven has a scale for air/nitrogen, working with other gases will only indicate a flow, but not read out accurate data. It will never be possible to work in a complete inert process chamber since there always will leak some air in to this process chamber. The inert gas only sees that you don't have so much oxidation as without inert gas.

Adjust the gas flow to approximately 200 L/hour, with a pressure between 2 and 4 bar.,and wait before start soldering about 10 minutes. The inert gas is heating before entering the process chamber, and cannot disturb your temperature profile.

**TECHNICAL SPECIFICATIONS HA-02 reflow oven:**

Max. PCB dimensions: 265 x 310 mm. (10 x.12 Inch.)

Power requirements: 200/240 VAC 50/60 Cs. single phase

Rated power max.: 2850 Watts

PREHEAT zone: 1250 Watts forced air convection heat

REFLOW zone: 1000 Watts quartz heaters, 550 watts IR-heater

Two heating zones, microprocessor controled.

PREHEAT TIME: 1-999 sec.

REFLOW TIME: 1-999 sec.

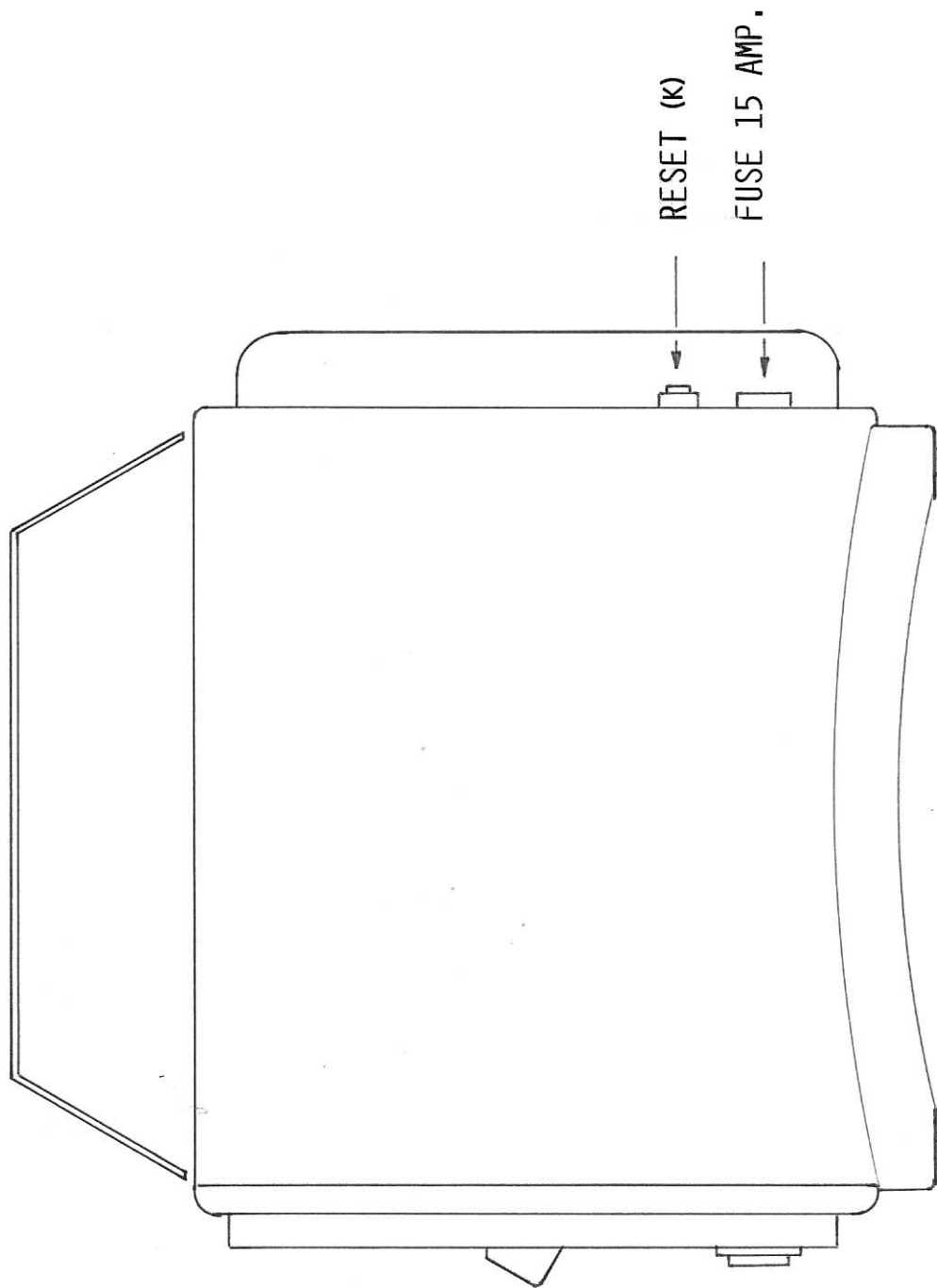
PREHEAT TEMP: 60-230°C

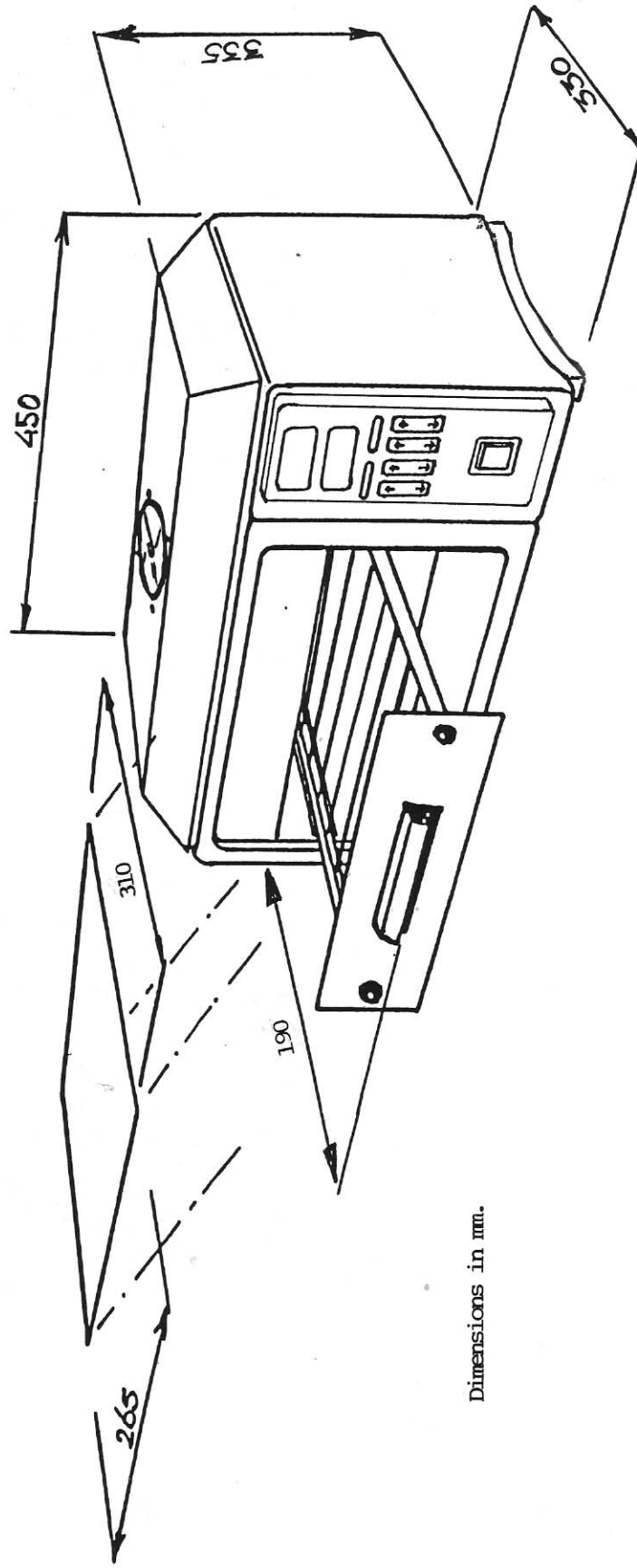
REFLOW TEMP: 90-260°C.

HEATUP time: approx. 6-8 minutes

Net weight: 10,5 kg.

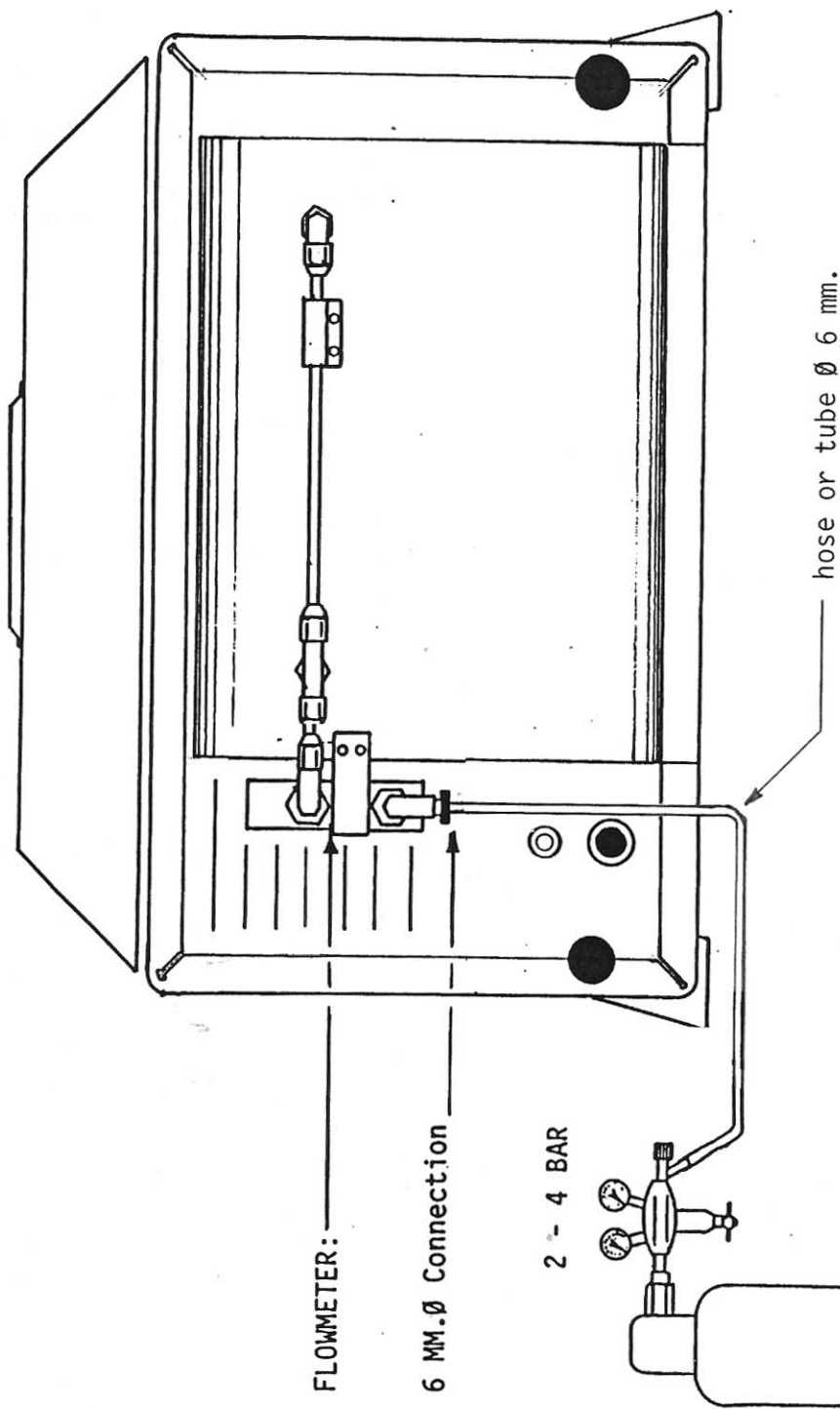
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Dimensions in mm.

HOT/AIR-QUARTZ REFLOW OVEN HA-02



FLOWMETER:

6 MM.Ø Connection

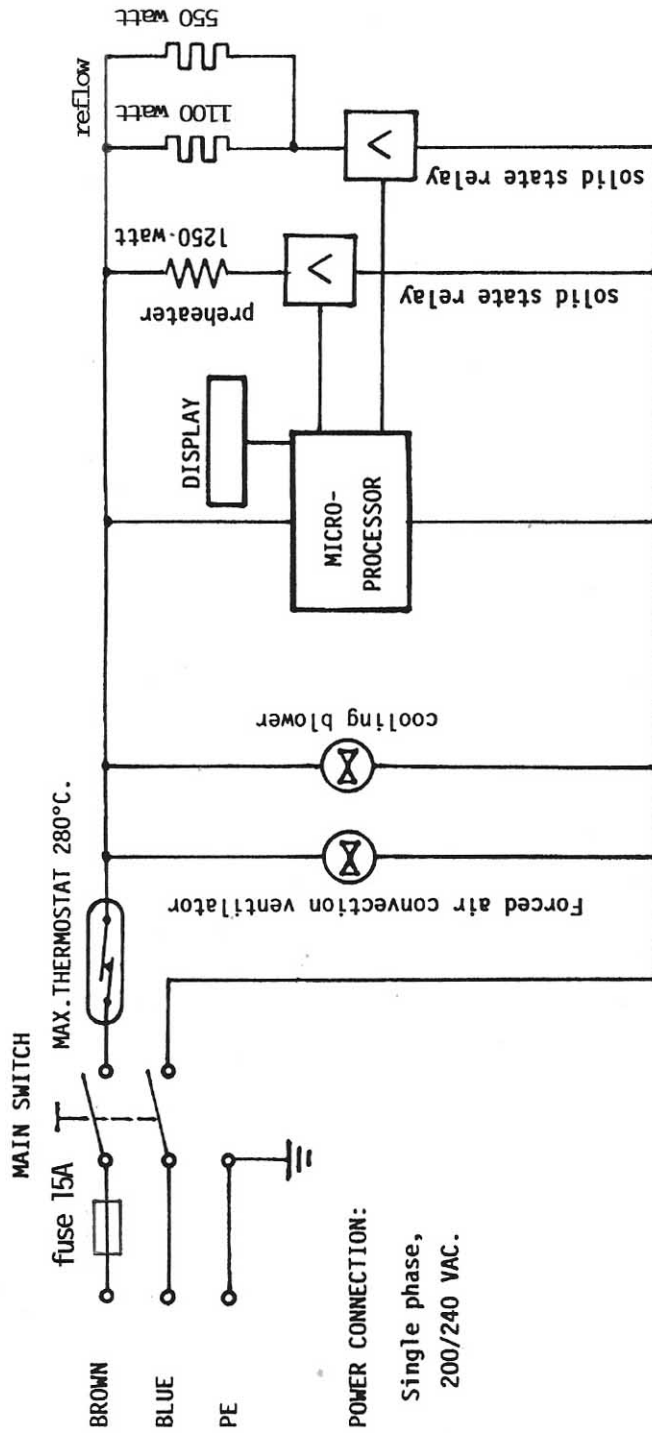
2 - 4 BAR

hose or tube Ø 6 mm.

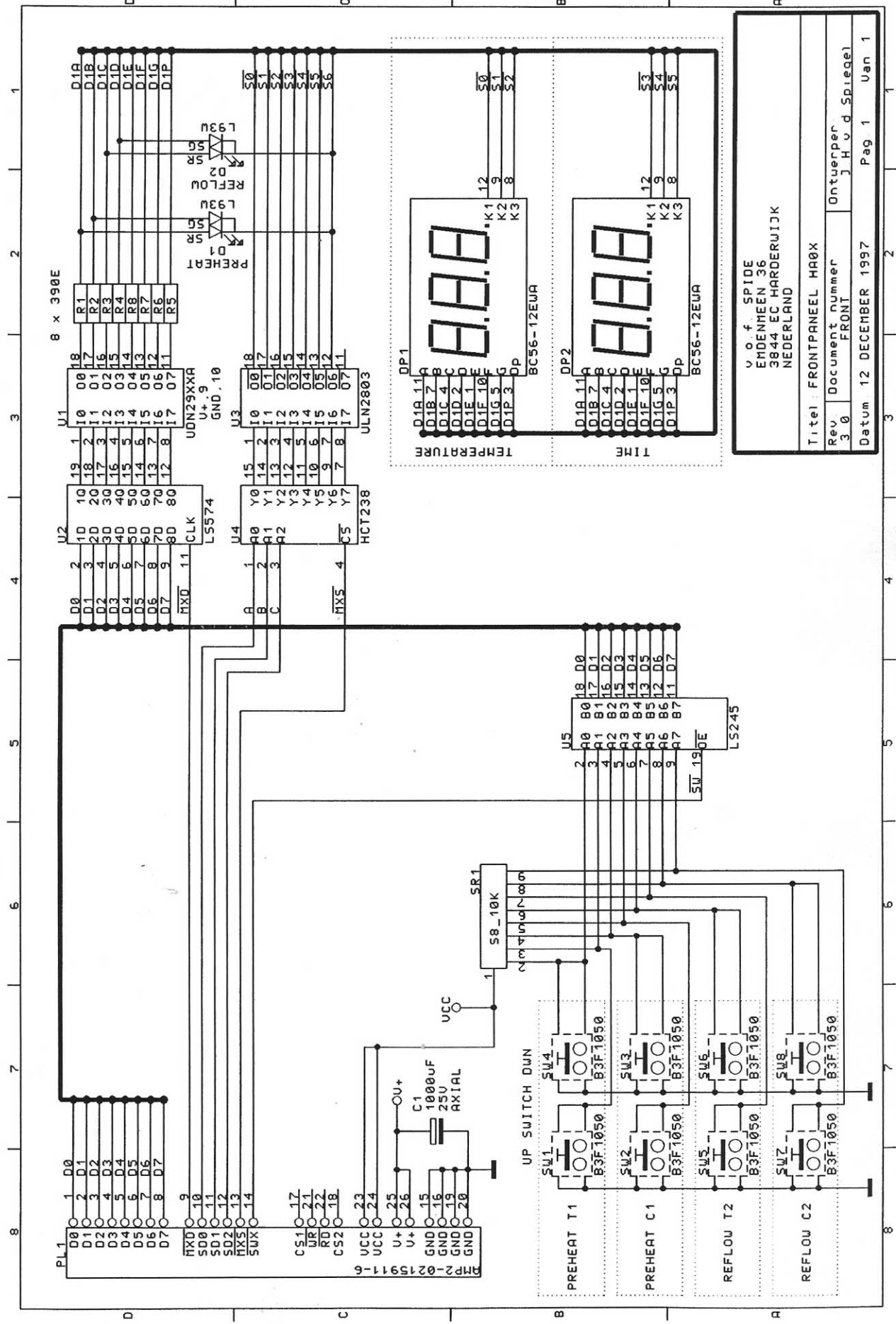
**INERT GAS CONNECTION REFLUX OVEN**

NITROGEN GAS

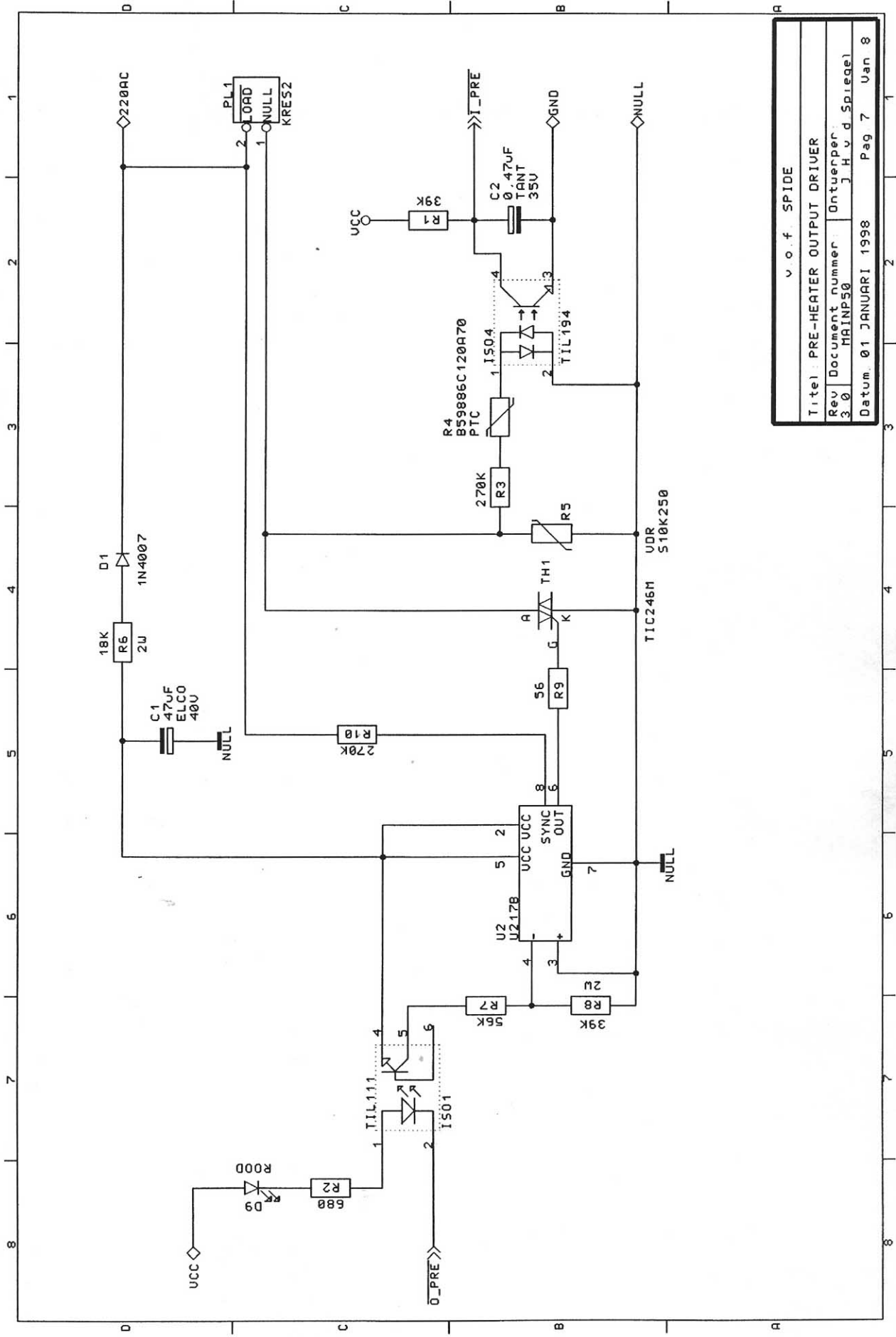




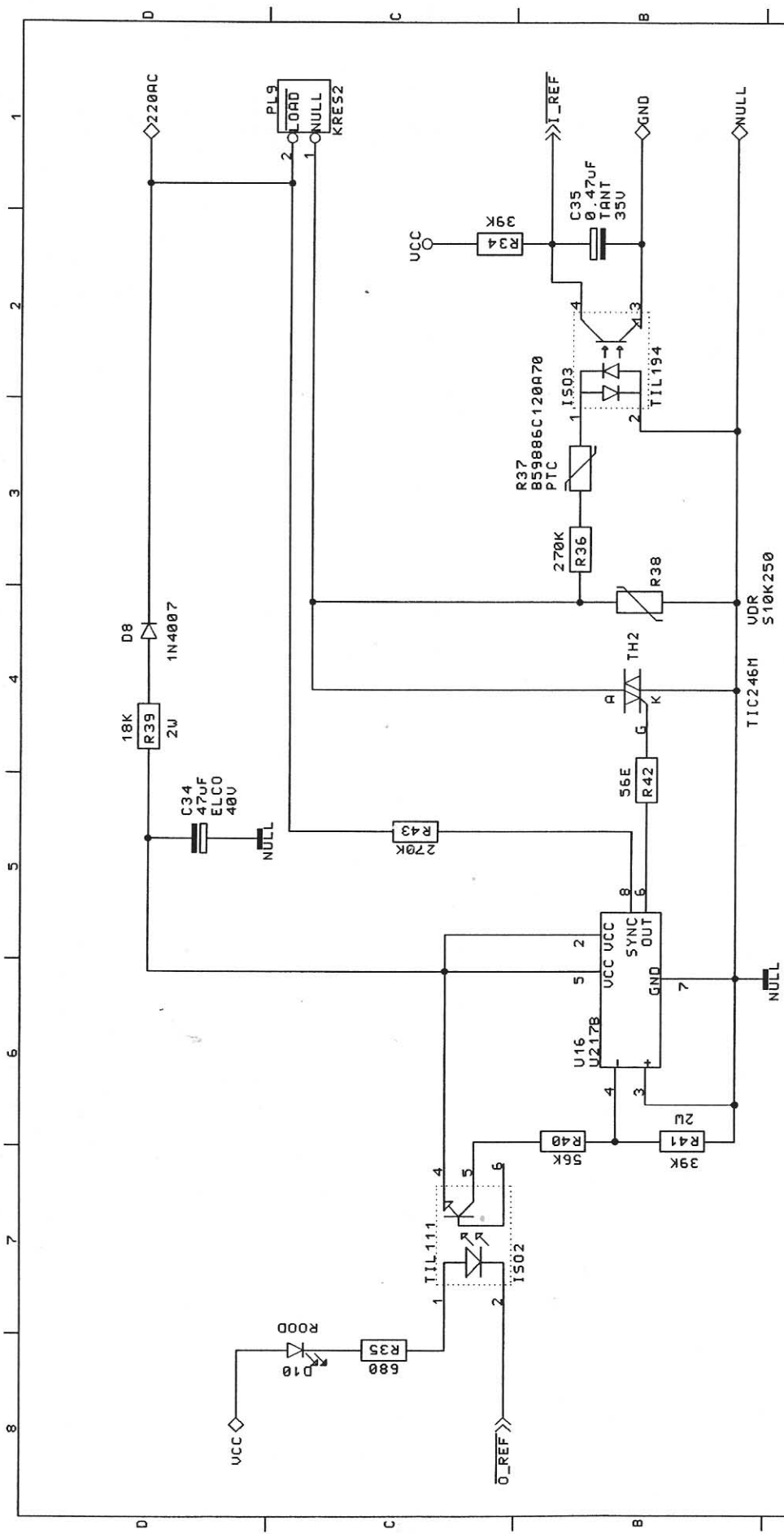
ELECTRIC CIRCUIT REFLOW OVEN MODEL HA/02



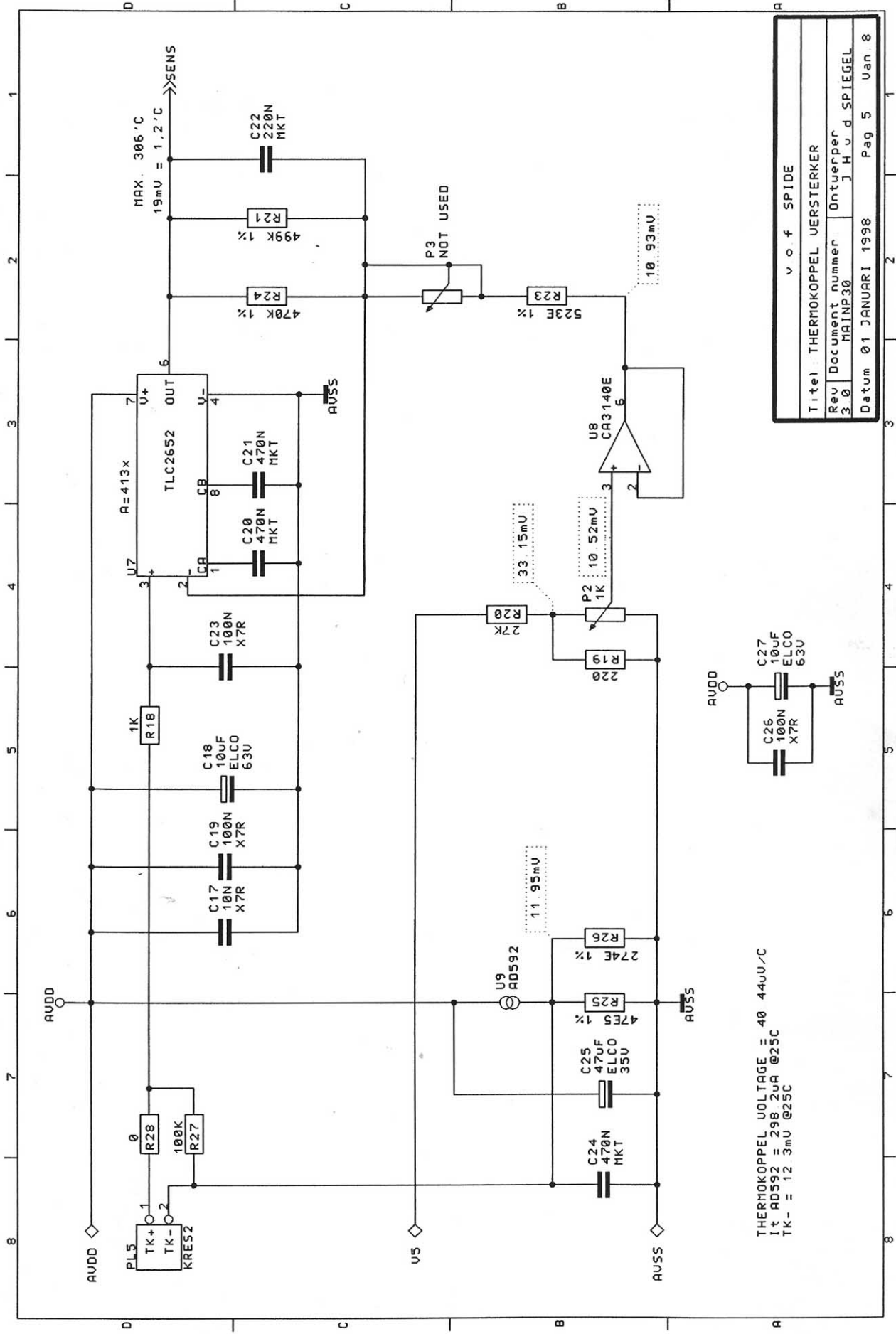
V o f . SPIDE  
 EMDENMEEN 36  
 3844 EC HARDERWIJK  
 NEDERLAND  
 Titel : FRONTPANEEL HA0X  
 Rev Document nummer Ontwerp  
 3 0 FRONT J H v d Spiegeel  
 Datum 12 DECEMBER 1997 Pag 1 Van 1



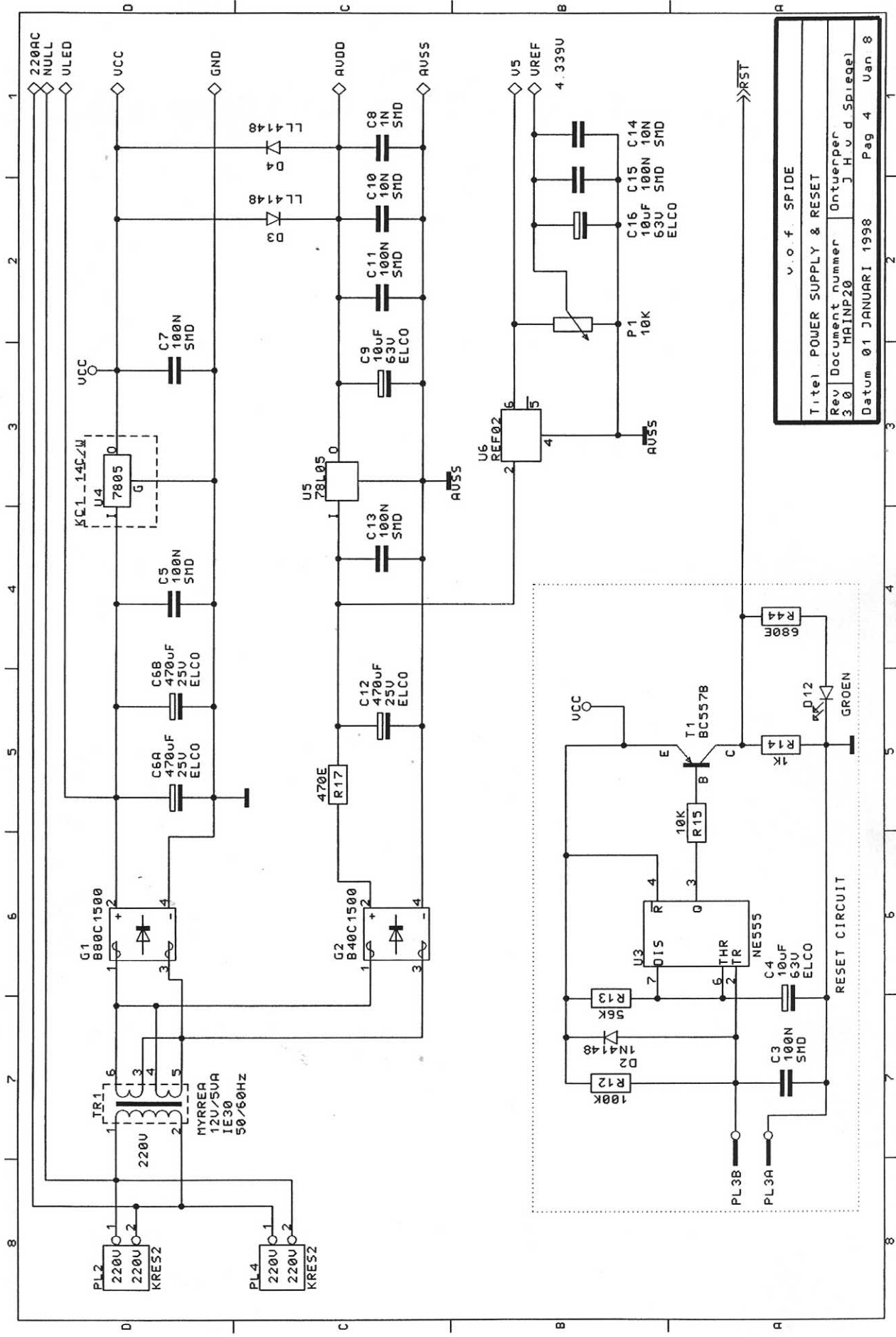
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Titel : PRE-HEATER OUTPUT DRIVER	
Rev	Document Nummer
3 0	MAINP50
Datum	01 JANUARI 1998
	Pag 7
	Jan 8



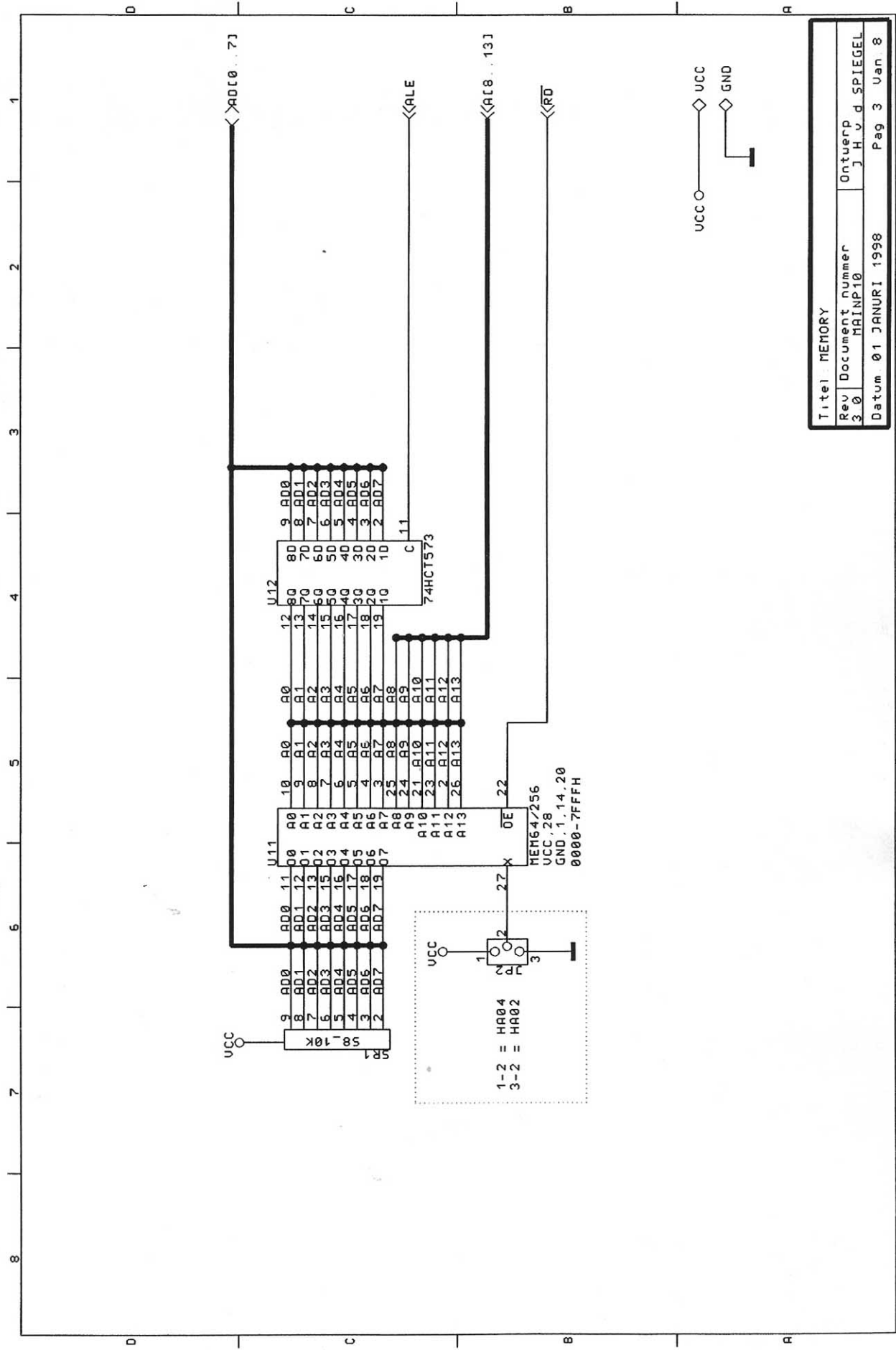
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Rev	Document number
3 0	MAINP40
Datum	Ontuerper
01 JANUARI 1998	J H v d Spiegeel
Pag 6	Van 8



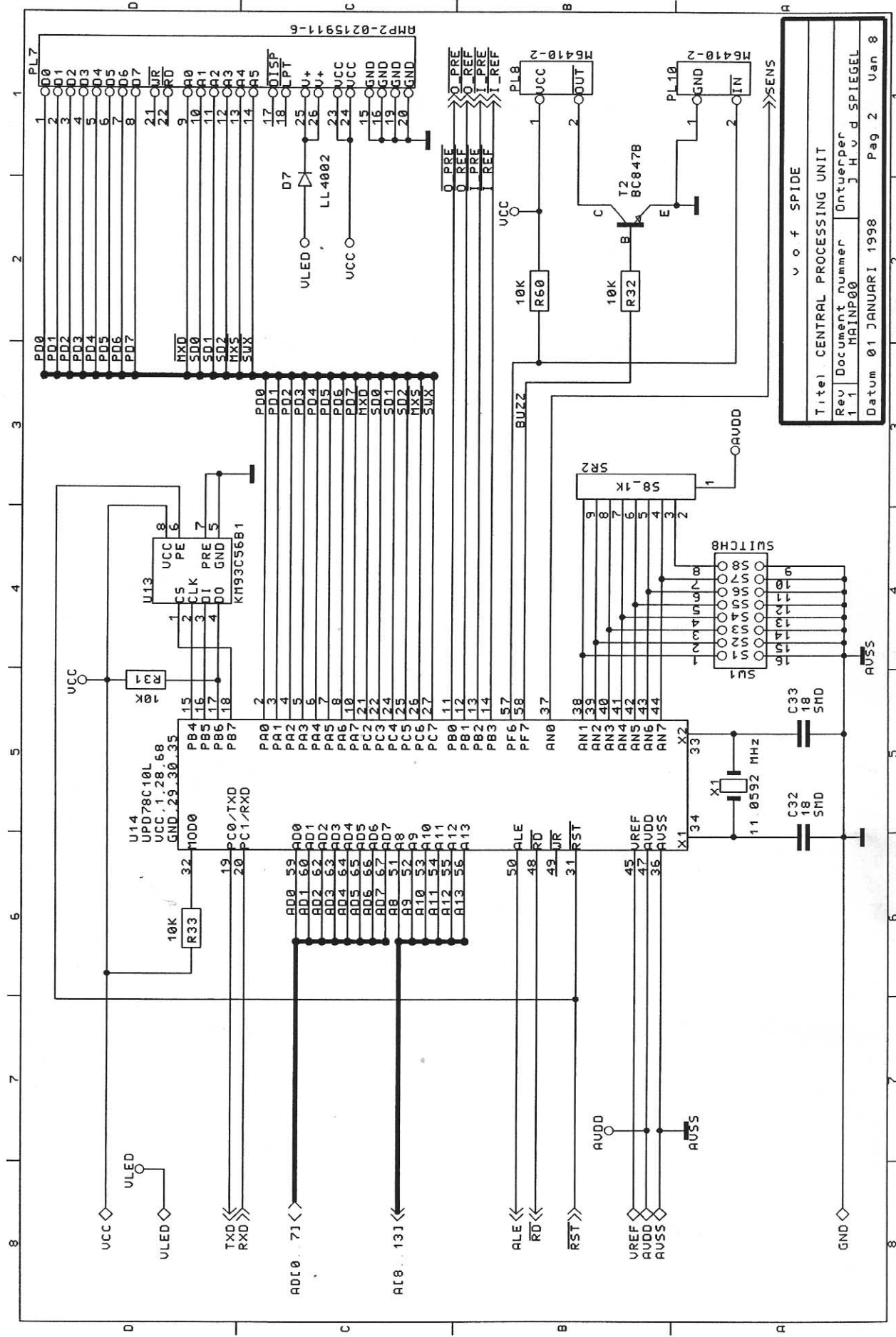
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Titel : THERMOKOPPEL VERSTERKER	
Rev	Document nummer
3 0	MAINP30
Ontwerp	
J H v d SPIEGEL	
Datum	Pag
01 JANUARI 1998	5
Jan 8	



v o f SPIDE	
Titel POWER SUPPLY & RESET	
Rev 3 0	Document number Ontuerper J H v d Spiege
Datum 01 JANUARI 1998	Pag 4 Van 8

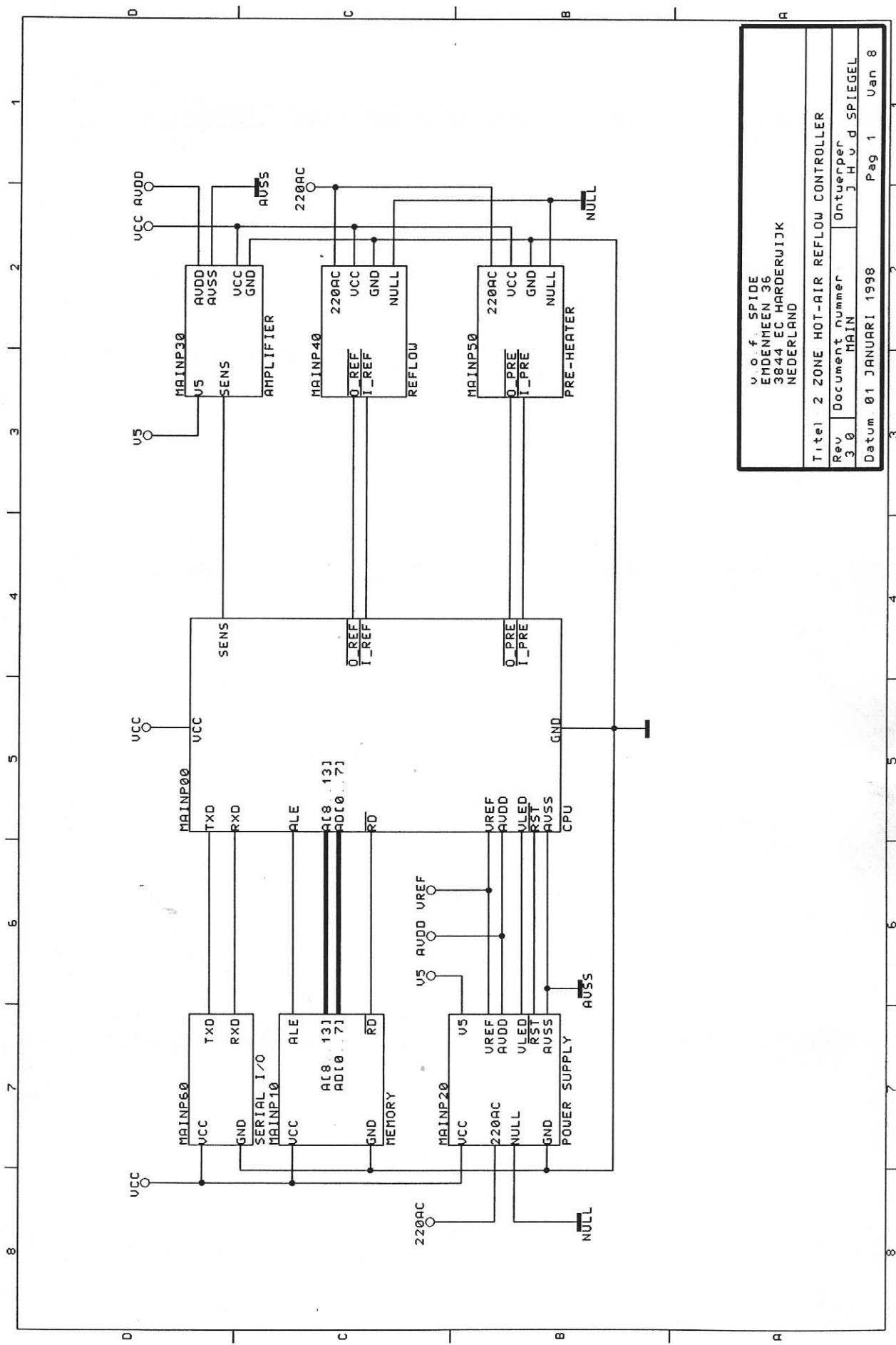


Titel: MEMORY	
Rev 30	Document Nummer MAINP10
Datum 01 JANUARI 1998	Ontwerp J. H. V. d. SPIEGEL
	Pag 3 Van 8



v o f SPIDE	
Titel CENTRAL PROCESSING UNIT	
Rev 1.1	Document number Ontuerper
MAINP00 J H v d SPIEGEL	
Datum 01 JANUARI 1998	Pag 2 Van 8





v o f SPIDE  
 ENDENMEEN 36  
 3844 EC HARDERWIJK  
 NEDERLAND

Titel: 2 ZONE HOT-AIR REFLOW CONTROLLER  
 Rev: 3 0 Document nummer: MAIN Ontwerper: J H v d SPIEGEL  
 Datum: 01 JANUARI 1998 Pag 1 Van 8

SPARE PARTS LIST HA/02 FORCED AIR CONVECTION REFLOW OVEN

PART NUMBER :	DISCRIPTION :	PRICE:
02-DGH	OVEN FRONT GLASS	
02-7054/120	TOP COOLING FAN	
02-D/GRIP	DRAWER GRIP	
02-CFH	HOOD COOLING FAN	
02-FPCB	PC-BOARD, FRONT	
02-MPCB	PC-BOARD, MAIN (MICROPROCESSOR)	
02-RB	RESET SWITCH	
02-BUZ	BUZZER	
02-DRR	OVEN DRAWER RAILS	
02-DFR	OVEN DRAWER FRONT	
02-MSH	DOOR MICROSWITCH with HOOK	
02-OFE	PLASTIC OVEN FEET	
02-FR+DGH	OVEN FRONT with OVEN GLASS	
02-COV	OVEN COVER	