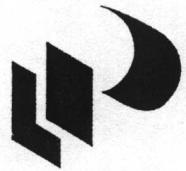


POLYGRAPH

Grafische Geräte GmbH



User's and Service Manual

PGG-Copiers with Computer V 2.0

1. Computer
 - 1.1. Keyboard
 - 1.2. Programming
 - 1.3. Checking the current values
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7. List of Functions (universal)

POLYGRAPH

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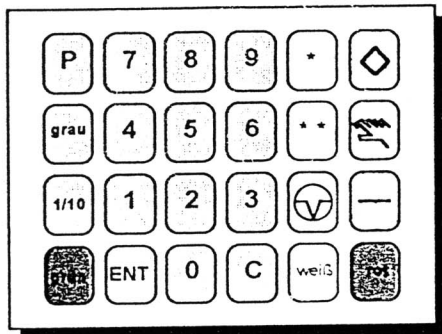
Telefon : *** - 341 - 4511202

Telefax : *** - 341 - 4511268

1. Computer

The built-in computer has 100 exposure programs. Each program has memory functions for vacuum time (VAC1 and VAC2), main exposure time (EXP 1), foil exposure time (EXP 2) and power stage for EXP 1 (POW 1) and EXP2 (POW 2).

1.1. Keyboard



Key	Function
P	program selection / function call
grey/blank	short activation: change of display values long activation (at least. 3 sec.): Stand-By*
1/10	decimal point for numerical input
green/blank	start button (start program), only for automatic machines
0..9	numerical input
ENT	Enter (confirmation)
C	clear (correction of the last input)
*	service menu
**	measurement of the burner brightness ON/OFF
V circle	switch impulse/standard-vacuum
white/blank	open/close glass pane frame (for cleaning Copyplate -A)
diamond	pause or display exposure on/off
Hand	change of numerical values
-	masking, 3. exposure
rot/blank	stop button (stop program)

- *) Pressing the Stand-By key will terminate the program, switch off the display and close glass pane frame (Copyplate KA) or roll blanket (Copyroll) --> **Stand-By Mode**
Pressing the Start key (green/blank) will re-activate the computer.

1.2. Programming

A specific time frame, can be stored as a selectable program number. The program remains stored after the machine has been switched off.

Procedure:

Input of the desired program number :

1. press P
"PROGRAM-No.:" will be displayed
2. enter program number (two digits)
number will be displayed
3. if the number is correct, confirm with ENT (or correct with C)

Now the desired program is active and the times can be entered:

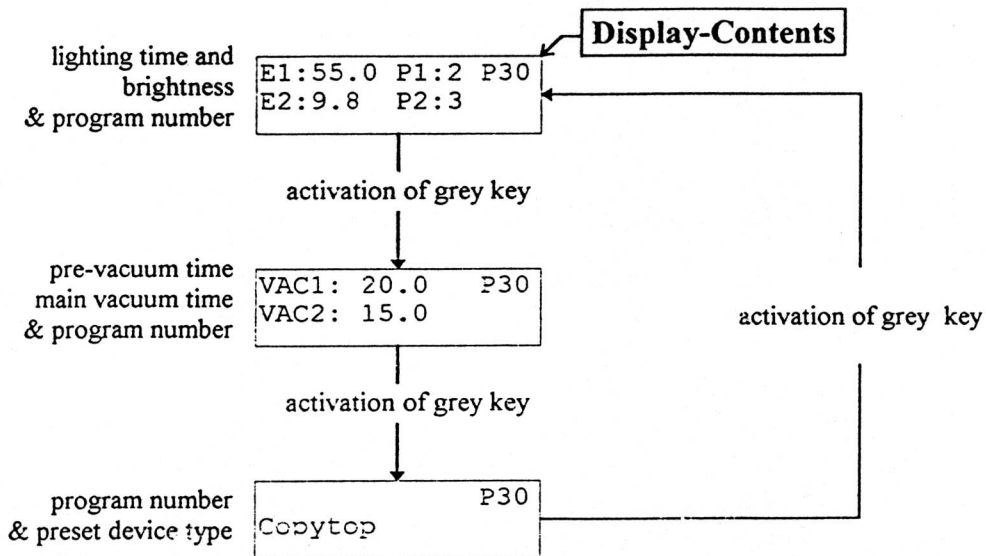
1. press the HAND key
VAC1 (numerical value) will be displayed
2. enter the desired value (0..999) for vacuum 1 (pre-vacuum) the value will be displayed
3. if the value is correct, confirm with ENT (correction with C)
VAC2 (numerical value) will be displayed
4. enter the desired value (0..999) for vacuum 2 (main-vacuum) the value will be displayed
5. if the value is correct, confirm with ENT (correction with C)
EXP1 (numerical value) will be displayed
6. enter the desired value (0..999) for exposure 1 the value will be displayed
7. if the value is correct, confirm with ENT (correction with C)
EXP2 (numerical value) will be displayed
8. enter the desired value (0..999) for exposure 2 with dispensor the value will be displayed
9. if the value is correct, confirm with ENT (correction with C)
POW1 (numerical value) will be displayed
10. enter the desired brightness value (1..3) for the exposure 1 the value will be displayed
11. if the value is correct, confirm with ENT (correction with C)
POW2 (numerical value) will be displayed
12. enter the desired brightness value (1..3) for the exposure with dispensor the value will be displayed

Now the new settings for exposure times and brightness levels will be displayed and stored automatically. Pressing the key "grey/blank" will display the vacuum values. On every further call of this program, the new values will be displayed.

1.3. Checking the current values

The values of the current program can be displayed by pressing the "grey/blank" key.

The following figure gives an example:



EMERGENCY OFF Function

The device types with automatic Copyroll and Copyplate have a safety switch. This safety switch ensures that objects or parts of the human body cannot become jammed in the copier.

If an object jams during the lowering of the glass pane frame (Copyplate) or during the movement of the rubber cover (Copyroll), the computer will execute the so-called EMERGENCY OFF function.

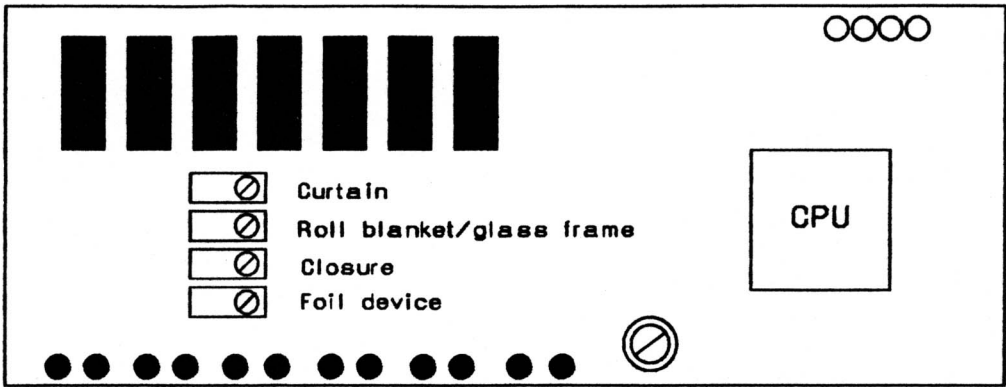
The further procedure depends on the device type:

Copyroll: "*** EMERGENCY OFF ***, press diamond key" will be displayed. While the diamond key is being pressed, the rubber cover will move in the opposite direction (**) -> jammed objects will be released in any case. When the object has been removed, the copy procedure can be continued by pressing the start key (green/blank).

Copyplate: The glass pane frame stops and will then move upwards for appr. 1 second. "*** EMERGENCY OFF ***, press diamond key". The copy procedure can be continued by pressing the diamond key.

1.4. Setting

Motor run-down setting



Potentiometer for the setting of the run-down current
Spin direction for the motor run-down setting:

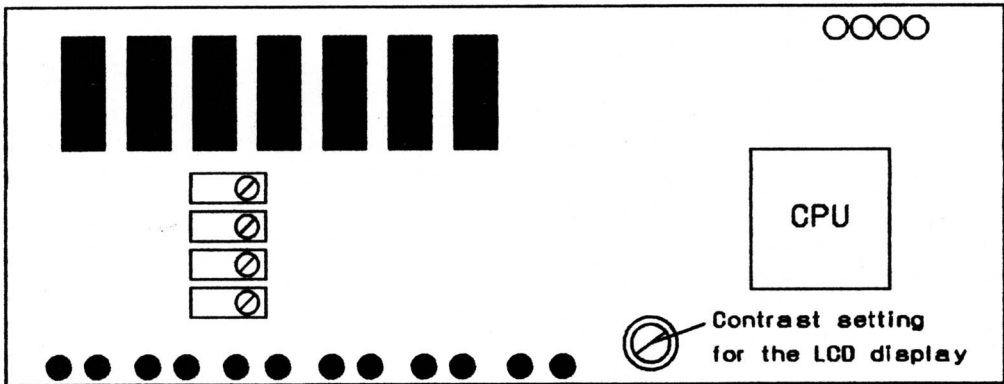
clockwise:

the threshold value of the current that leads to a motor run-down is increased (-> less sensitive)

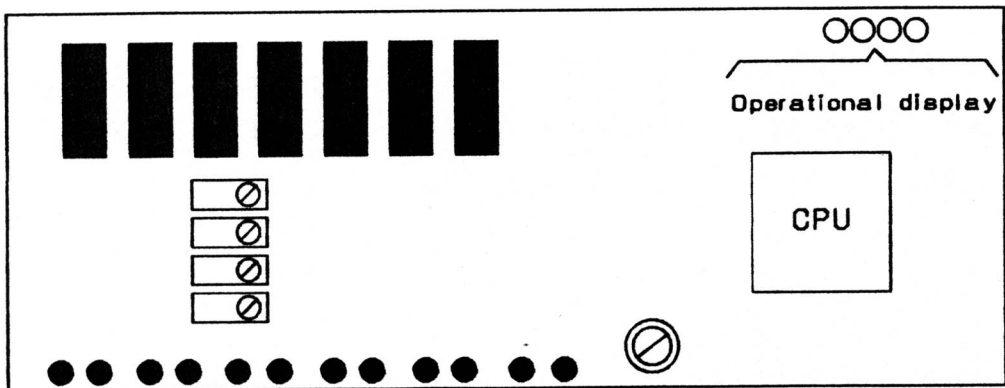
counter-clockwise:

the threshold value of the current that leads to a motor run-down is decreased (-> more sensitive)

Contrast settings for the display



Operational display on the Computer's PCB



1.5. Commissioning

- For **manually operated glass plate machines** make sure that the external start contact is open (the glass plate is opened), otherwise the copy procedure will start immediately after switching on.
- Switch on machine. Start-up phase** (the following error messages can occur):
 - Error: ST62 Timeout** ⇒ The computer gets no response from the "Meßkarte A2".
Possible causes:
 - Faulty connection between "Meßkarte" and computer.
 - Defective "Meßkarte A2".
 - Defective opto coupler inputs.
 - Defective EEPROM.** *Please replace* ⇒ The EEPROM has probably been written too often AND has to be replaced. (Consider the following possibility: the customer sends in his old EEPROM and gets a new one with the old values written to it-this way he can continue working with the old settings.)
 - Motor current too high** ⇒ The computer tried to reset one of the motors, but the motor has switched off (refer to 2.3.)
 - Position switch xxx (4 possible values) not connected.**
This message can be ignored unless the device type is a *Copytop*.
Otherwise the specified position switch has to be checked because it has not been recognised by the system. The position switch is either wrongly or not connected.
- Select **DEVICE TYPE-setting** (Service-level 2/ #4). Set desired device type.
- Set the **bulb's nominal voltage** for level 1 and level 2 (function *U Br*):
(Service-level 2/ #7, and 2/ #8)

<i>power</i>	<i>Typ MH lamp</i>	POW 1 (#7)	POW 2 (#8)
• MH1	THS 1007	75 V	90 V
• MH2	JGMH 2111-7	105 V	120 V
• MH3/MH5	JGMH 3510-0	165 V	190 V

- Set the **fan's nominal voltage-fix** (Service-level 2/ #14 key [7])
 - MH1 and MH2**

power level 1	key [1]	number 8	(ca.110 V AC)
power level 2	key [2]	number 14	(ca.160 V AC)
power level 3	key [3]	number 19	(ca.220 V AC)
 - MH3 and MH5**

power level 1	key [1]	number 10	(ca.135 V AC)
power level 2	key [2]	number 15	(ca.180 V AC)
power level 3	key [3]	number 19	(ca.220 V AC)
- Select **language** (refer to Service-level 1/ 5:).
- Check the **position switch inputs** with LED display or the program function INPUT-TEST (service level 1/ 8:) (refer to 2.2.1)
- Run **MOTOR-TEST** (Service-level 1/ 9:)

9. Run **OUTPUT-TEST** (Service-level 1/ 7:)

- Switch the vacuum pump on/off with key [1]
- Switch the magnetic valve on/off with key [2]

if the bulb is lit:

- Switch the semi-conductor relay for the bulb level 2 on/off with key [5].
- Switch the semi-conductor relay for the bulb level 3 on/off with key [6].

10. **Photosensor calibration:** function *EICHUNG PHOTONSENSOR*
(Service-level 2/ #1).

Set threshold for the acoustic signal value to which the Photosensor is to be calibrated. ⇒ **value 165**

Adjust the Photosensor until the acoustic signal sounds. Save the value with [ENT].

Now an internal calibration process starts which takes about 2 minutes. While the message "Interne Kalibr." is displayed, the calibration is still in progress.

The end of the calibration is signalled accoustically.

11. *Setting the bulb power limits in %* with [ENT]
(Service-level 2/ #3)

⇒ **value 65**

12. *Input of ventilation time* with [ENT] (Service-level 2/ #6)

- Copytop, Copybox and Copyplate K or V **0 sec.**
- Copyroll **2 sec.**
- Copyplate KA **5 sec.**
- Supernova **20 sec.**

13. *Input of the permissible minimum vacuum value* with [ENT]
(Service-level 2/ #9)

⇒ **value 0,6**

2. **Service- and Diagnostics**

Pressing the [*] key brings up a menu which allows a choice between two service levels. After selecting [1] or [2], the required function can be selected with the function number. The individual menus can be browsed with the "grey/blank" key.

2.1. **First Service-level**

To exit this level use the [*] key. The menu items 0...9 can be selected directly using the keys 0...9. The following functions are available in this level :

- 1 : **Display the operational hours**
M:(Machine) B:(Bulb).
If the machine has no QS-bulb, the number of exposures will be displayed instead of the operation time.
- 2 : **Number of copies to date**
- 3 : **measurement of the internal temperature after pressing [ENT]**
Abort the measurement with the [*] key.
- 4 : **Activation / deactivation of the Photosensors with [ENT]**
- 5 : **Changing the current language with [ENT]**
- 6 : **Systeminfo: Software-Version**
- 7 : **Test of all 4 outputs with [ENT]:**
key [1] : Vacuum pump (M1)/Magnetic valve 1 (Y1)
key [2] : Vacuum pump/Magnetic valve 2 (Y2)
key [5] : Power level 2 (V3)
key [6] : Power level 3 (V4)
return with the [*] key
- 8 : **Status display for all inputs with [ENT]**
return with the [*] key
- 9 : **Motor-Test: Start with [ENT]**
key [0] : shutter (M21)
key [2] : disperser (M3)
key [5] : curtain (M4)
key [8] : Glass pane frame/rubber cover (M2)
return with the [*] key
- 10 : **Input the Impulse-vacuum pause time with [ENT]**
The old values (if any) are shown in brackets
- 11 : **Deleting the "bulb hours" after a bulb change with [ENT]**
If the machine has a QS-bulb, the number of exposures will be deleted instead of the operational time.

Service-Information (Only for Service-Personel)

If, during commissioning, the preset device type does not match the machine device type, it is possible to skip the position switch checking routine and by pressing key [5] while switching on the machine. If this is done, the computer directly enters service level selection display, where you can change the device type.

2.2. Second Service-level:

PIN: 1 2 3 3

To enter this level, a PIN-CODE must be typed in. (The current code is '.....'). Then the function number can be entered or the [ENT] key pressed. The individual menus can be browsed with the "grey blank" key. This level can be exited using the [*] key. It contains the following functions:

- # 1 **Calibrating the Photosensor with [ENT]**
First enter the threshold value above which an acoustic signal will be sounded. Then the light value of the sensor can be set with the potentiometer. The old threshold value (if any) will be displayed in brackets.
The current value can be saved using [ENT] Then an internal calibration process starts which takes about 2 minutes. The calibration process can be aborted with the "red blank" key.
- # 2 **Measurement of bulb brightness with [ENT]**
Bulb specific values (Light value, current, voltage and power) will be displayed.
The bulb can also be switched to various power levels
key [1]: bulb level 1 (not with QS-Bulb)
key [2]: bulb level 2
key [3]: bulb level 3
return with the [*] key
- # 3 **Setting the bulb power limits in % with [ENT]**
A warning will be given after every exposure if the value falls below this limit.
The current value (in %) will be shown in brackets
- # 4 **Setting the machine type with [ENT]**
The list of machine types can be browsed in both directions using the "2" or "5" keys for the desired type. Once the desired type has been found, this function can be exited using the [*] key.
- # 5 **Run-In-Test: activation with [ENT]**
First a value for the time between the copy procedures has to be entered. Then the run-in-test starts and can only be aborted with the "red blank" key. Afterwards the number of successful copies will be displayed.
- # 6 **Input of ventilation time with [ENT]**
The old value (if any) will be displayed in brackets.
- # 7 **Input of the nominal bulb voltage for level 1 (standby) with [ENT]**
The old value (if any) will be displayed in brackets.
- # 8 **Input of the nominal bulb voltage for levels 2 with [ENT]**
The old value (if any) will be displayed in brackets.
- # 9 **Input of the permissible minimum vacuum value with [ENT]**
The old value (if any) will be displayed in brackets. Enter the value "0.0" to deactivate the vacuum monitoring.
- # 10 **Deleting the machine hours with [ENT]**
- # 11 **Deleting the number of copies with [ENT]**

14 Setting the vent with [ENT]

key [7]: The ventilation level can be set separately for each power level.

key [1]: Power Level 1 (STANDBY)

key [2]: Power Level 2 (POWER 2)

key [3]: Power Level 3 (POWER 3)

return with the [*] key

For each power level, the ventilation level can be set to 18 different fixed values (1 to 19) with the keys [2](down) [5](up). When the desired level is set, this sub menu can only left using the key [ENT]. The fixed ventilation level for each power level is saved.

key [9]: Setting to auto-adjust according to the bulb voltage. If fixed ventilation levels are saved, they will be overwritten.

return with the [*] key

note: if a power level is not changed, the ventilation level will be adjusted to the bulb voltage automatically for this power level, so that a mixed mode of fixed ventilation level and auto-adjusted ventilation is possible.

15 Setting vacuum offset with [ENT]

The vacuum hose has to be disconnected from the measuring board. The first value on the display is the currently measured offset value from the manometer. The old value (if any) will be displayed in brackets.

If the board has been newly installed or after a defloration, the old value (in brackets) will be 0.00 bar. If the [*] key is pressed, the current offset value will be stored on (burnt to) the EEPROM.

return with the [*] key

2.3. Position switch settings

2.3.1. Monitoring with the program function INPUT-Test

(Service-level 1/ 8:)

Position switch numbers:

- 1: foil device(dispersion foil)
- 2: not used
- 3: roll blanket (Copyroll) or
glass pane frame (Copyplate A)
- 4: curtain
- 5: safety switch
- 6: closure (shutter)

Status symbols:

- <: completely left (different definition for each switch)
- >: completely right (different definition for each switch)
- #: in between
- : not connected

Typ of machine		State of LCD display					
in computer	in price list	(Stand by)					
Copytop	CT.../2 MH..	1<	2-	3<	4-	5-	6>
Copytop Q	CT.../2 QS3	1<	2-	3<	4-	5-	6-
Copyplate	CP.../2 MH.. K	1<	2-	3<	4-	5-	6>
Copyplate A	CP.../2 MH.. KA	1<	2-	3<	4-	5#	6>
Copyplate V	CP.../2 MH.. V	1<	2-	3<	4<	5-	6>
Copyplate VA	CP.../2 MH.. VA	1<	2-	3<	4<	5#	6>
Copyplate Q	CP.../2 QS3 K	1<	2-	3<	4-	5-	6-
Copyplate QA	CP.../2 QS3 KA	1<	2-	3<	4-	5#	6-
Copyplate QV	CP.../2 QS3 V	1<	2-	3<	4<	5-	6-
Copyplate QVA	CP.../2 QS3 VA	1<	2-	3<	4<	5#	6-
Supernova ¹⁾	SKU.../2 MH.. K	1-	2-	3<	4-	5-	6>
Supernova A	SKU.../2 MH.. KA	1-	2-	3<	4-	5#	6>
Supernova V	SKU.../2 MH.. V	1-	2-	3<	4<	5-	6>
Supernova VA	SKU.../2 MH.. VA	1-	2-	3<	4<	5#	6>
Supernova Q	SKU.../2 QS3 K	1-	2-	3<	4-	5-	6-
Supernova QA	SKU.../2 QS3 KA	1-	2-	3<	4-	5#	6-
Supernova QV	SKU.../2 QS3 V	1-	2-	3<	4<	5-	6-
Supernova QVA	SKU.../2 QS3 VA	1-	2-	3<	4<	5#	6-
Copyroll	CR.../2 MH..	1<	2-	3<	4-	5#	6>
Copybox	CB.../2 MH..	1<	2-	3<	4-	5-	6>
Copybox 50 ²⁾	CB50/2 MH1	1-	2-	3<	4-	5-	6>

¹⁾ how Copyplate without foil device

²⁾ also Copybox without foil device for Cromalin

Devices with safety switch

The contact "Emergency OFF-Backwards" has to be **bridged** for the devices Copyplate & Copyroll.

Copyplate:

Connect all Emergency OFF contacts in series to "Emergency OFF-Forwards".

Copyroll:

Connect all 5 Emergency OFF contacts in series to "Emergency OFF-Forwards".

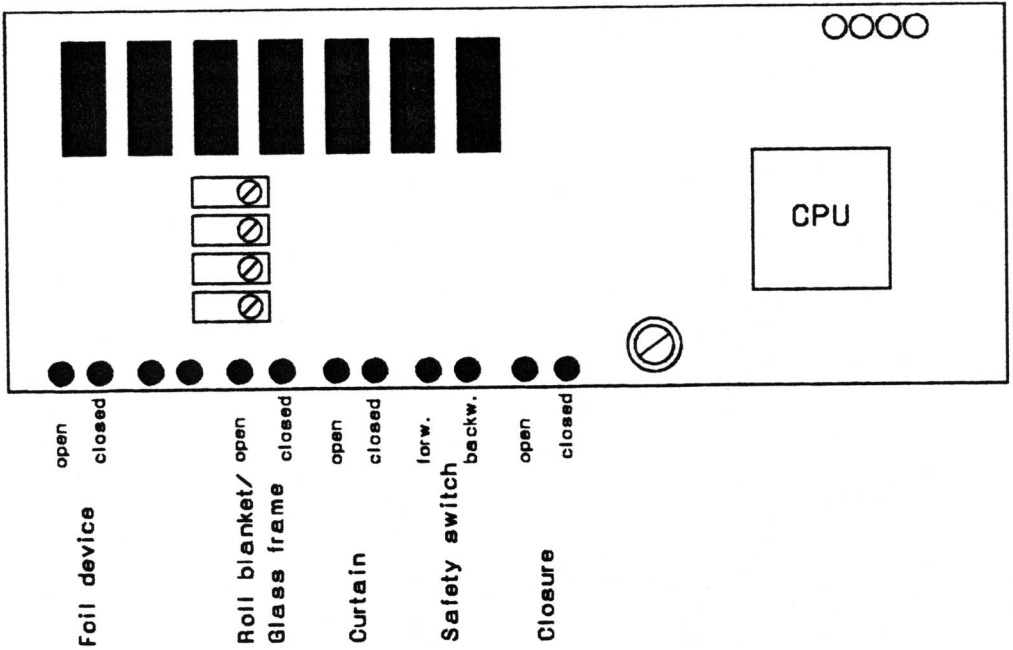
2.3.2. Monitoring with LEDs

Symbol definition:

- SF = foil device/dispersion foil (Streufolie)
- RG = roll blanket /glass pane frame
(Rolldecke/Glasscheibenrahmen)
- VO = curtain (Vorhang)
- NOT = Emergency OFF (Notaus)
- VE = closure/shutter (Verschluss)

LED-states:

- = LED on -> micro switch no operate
- = LED off -> micro switch operate
- ⊗ = no applicable



Typ of machine		State of LED display (Stand by)											
in computer	in price list	SF		free		RG		VO		NOT		VE	
		o	c			o	c	o	c	f	b	o	c
Copytop	CT.../2 MH..	●	○	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	○	●
Copytop Q	CT.../2 QS3	●	○	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Copyplate	CP.../2 MH.. K	●	○	⊗	⊗	●	○	⊗	⊗	⊗	○	○	●
Copyplate A	CP.../2 MH.. KA	●	○	⊗	⊗	●	⊗	●	○	⊗	⊗	○	●
Copyplate V	CP.../2 MH.. V	●	○	⊗	⊗	●	○	●	○	○	○	○	●
Copyplate VA	CP.../2 MH.. VA	●	○	⊗	⊗	●	○	●	○	○	○	○	●
Copyplate Q	CP.../2 QS3 K	●	○	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Copyplate QA	CP.../2 QS3 KA	●	○	⊗	⊗	●	○	⊗	⊗	○	○	⊗	⊗
Copyplate QV	CP.../2 QS3 V	●	○	⊗	⊗	●	⊗	●	○	⊗	⊗	⊗	⊗
Copyplate QVA	CP.../2 QS3 VA	●	○	⊗	⊗	●	○	●	○	○	○	⊗	⊗
Supernova	SKU.../2 MH.. K	⊗	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	○	●
Supernova A	SKU.../2 MH.. KA	⊗	⊗	⊗	⊗	●	○	⊗	⊗	○	○	○	●
Supernova V	SKU.../2 MH.. V	⊗	⊗	⊗	⊗	●	⊗	●	○	⊗	⊗	○	●
Supernova VA	SKU.../2 MH.. VA	⊗	⊗	⊗	⊗	●	○	●	○	○	○	○	●
Supernova Q	SKU.../2 QS3 K	⊗	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Supernova QA	SKU.../2 QS3 KA	⊗	⊗	⊗	⊗	●	○	⊗	⊗	○	○	⊗	⊗
Supernova QV	SKU.../2 QS3 V	⊗	⊗	⊗	⊗	●	⊗	●	○	⊗	⊗	⊗	⊗
Supernova QVA	SKU.../2 QS3 VA	⊗	⊗	⊗	⊗	●	○	●	○	○	○	⊗	⊗
Copyroll	CR.../2 MH..	●	○	⊗	⊗	●	○	⊗	⊗	○	○	○	●
Copybox	CB.../2 MH..	●	○	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	○	●
Copybox 50	CB50/2 MH1	⊗	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	○	●

Connector-No.

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27

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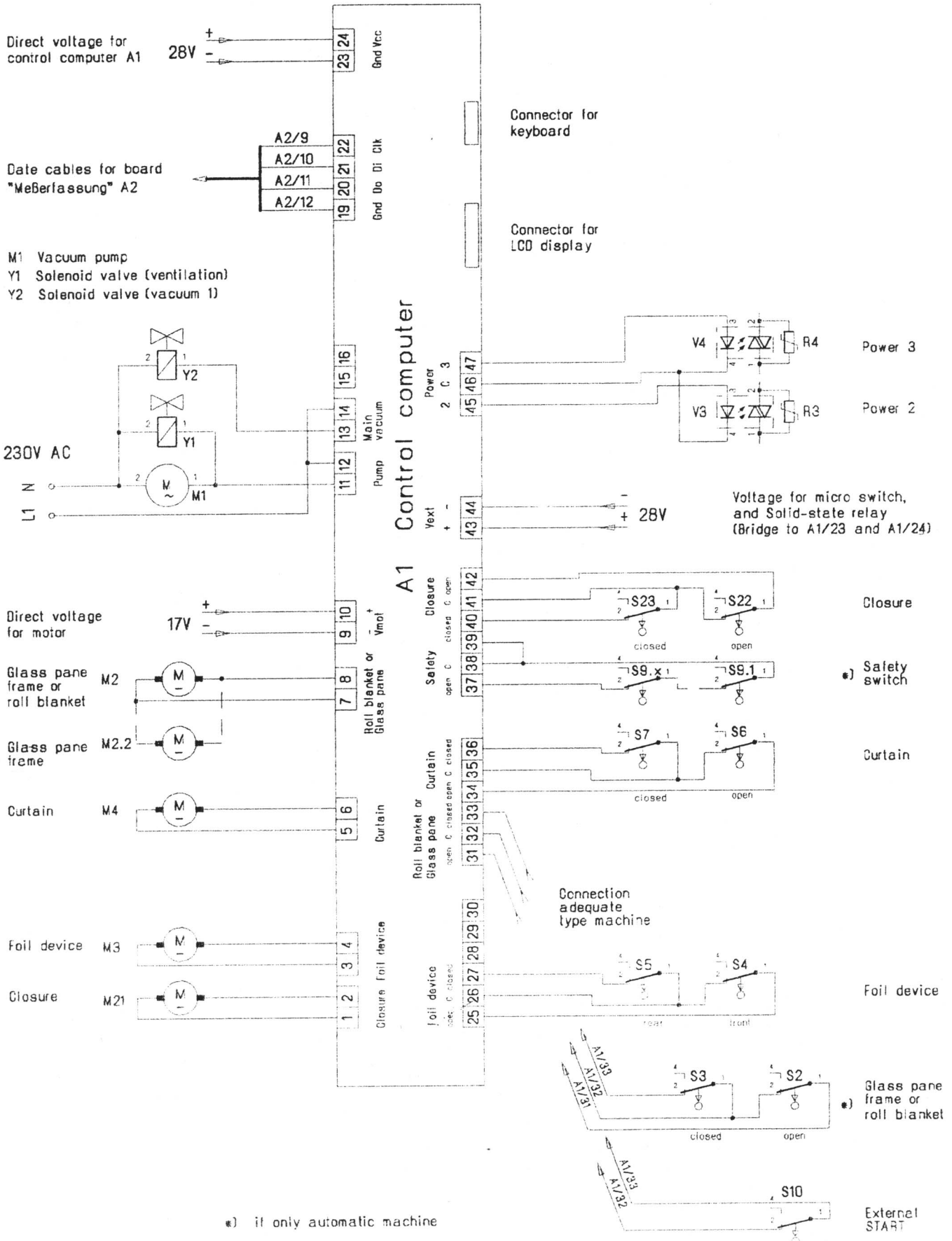
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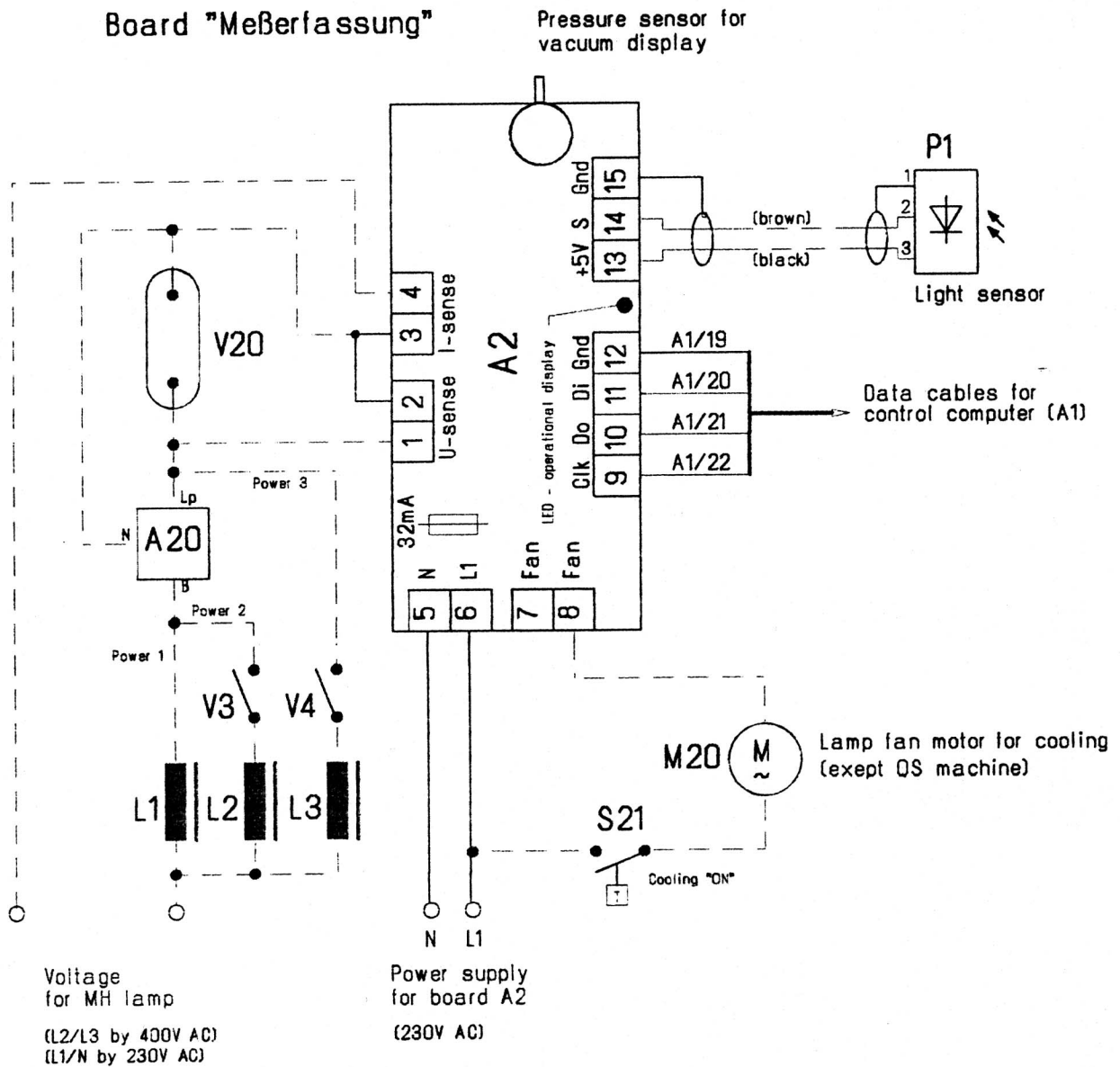
41

3. Connections for computer A1

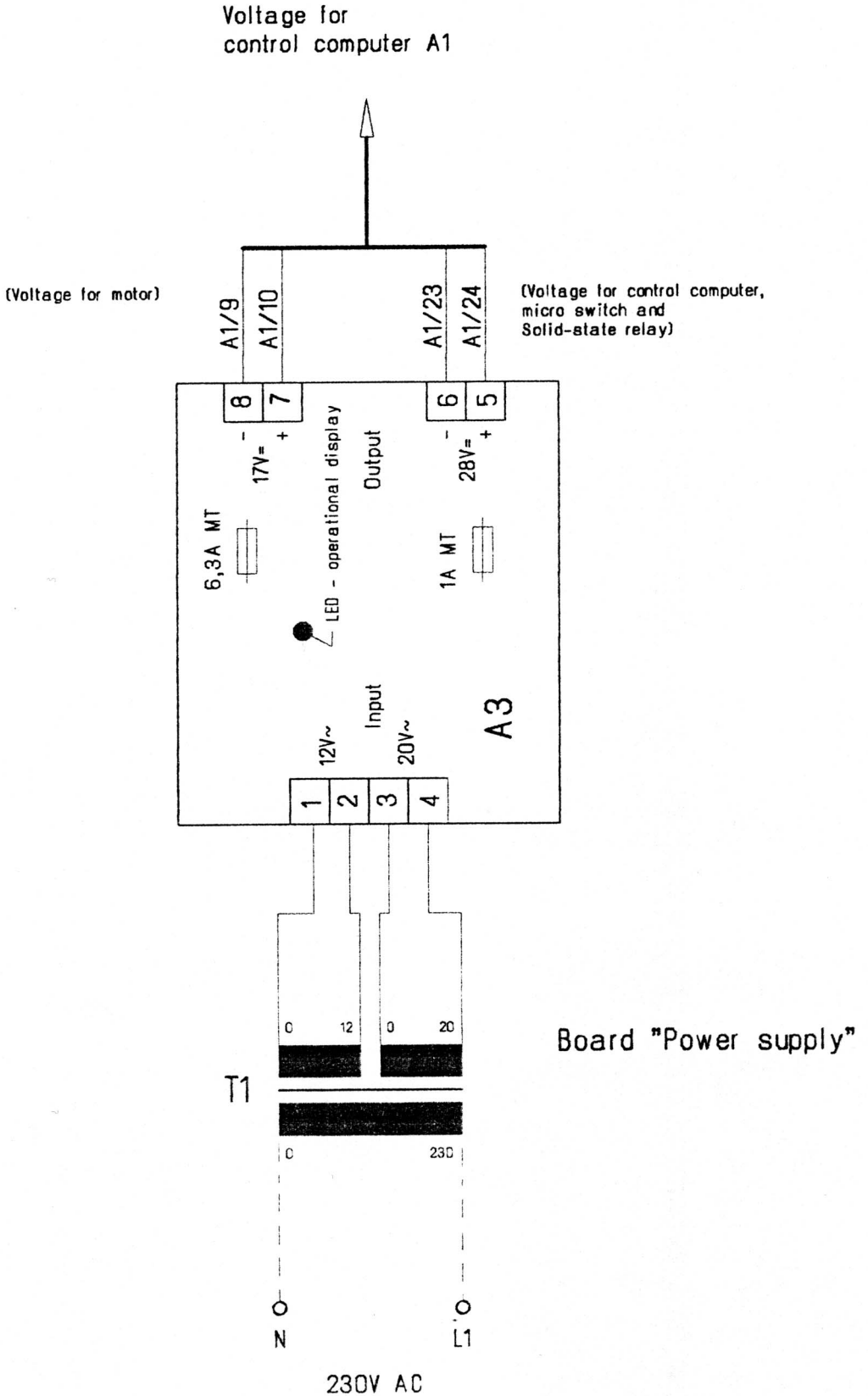


*) if only automatic machine

4. Connections for board "Meßkarte" A2



5. Connections for board power supply A3



6. List of Spare Parts (new components)

Price *)

for all machines :

972698	Keyboard cables	8,20 DM
972702	LCD display	140,00 DM
972703	Board "Meßkarte"	195,00 DM
972705	Board power supply	65,00 DM
972743	Board light sensor	76,50 DM
901221	Reducing socket GRS 8-4	1,20 DM
911 606	PVC-vacuum hose 4x1,5	0,99 DM/m

for Copybox, Copytop and Copyplate -K :

941238	Transformer 100VA	49,50 DM
972701	Computer V2.0, no complete	399,00 DM

for Copyroll and Copyplate -V or -KA :

941238	Transformer 180VA	67,50 DM
972700	Computer V2.0, complete	499,00 DM

*) All prices for dealer, without packing and ex works Leipzig.

7. List of Functions (universal)

A 1	Control computer	
A 2	Board "Meßerfassung"	
A 3	Board power supply	
A 20	Ignition board	
C 1	Interference suppression capacitor	
C 2	Compensating capacitor (MH) / High tension capacitor (QS)	
C 5	Ignition capacitor	
C 7	High tension capacitor	
F 1	AC control fuse	6,3AT
F 3	Fuse for MH lamp	25AT
F 4	Fuse for MH lamp	25AT
H 1	Loading lamp	
K 1	Mains contactor	
L 1	Choke, power stage 1 (MH) / Half-power ballast (QS)	
L 1.2	Choke, power stage 1	(only by MH 2)
L 2	Choke, power stage 2	
L 3	Choke, power stage 3	
L 4	Anti-interference coils	
M 1	Vacuum pump	
M 2	Roll blanket motor / Glass pane frame motor (left)	
M 2.2	Glass pane frame motor (right)	
M 3	Foil device motor	
M 4	Curtain motor	
M 5	Lamp fan motor	(add Copytop QS)
M 20	Lamp fan motor	
P 1	Light sensor	
Q 1	Mains switch	
R 2	Discharge resistance	
R 3	Varistor	
R 4	Varistor	
R 5	Discharge resistance	
S 1	ON switch	
S 2	Roll blanket or glass pane frame limit switch, open	
S 3	Roll blanket or glass pane frame limit switch, closed	
S 4	Foil limit switch, front	
S 5	Foil limit switch, rear	
S 6	Curtain limit switch, open	
S 7	Curtain limit switch, closed	
S 8	ON switch loading lamp	
S 9.1-9.x	Safety switch for automatic machine	
S 10	External START switch for manuell machine	
S 20	Bimetal-thermostat - safety switch (supervise temperature)	
S 21	Bimetal-thermostat - lamp fan motor, ON	
S 22	Closure limit switch, closed	
S 23	Closure limit switch, open	
T 1	Control transformer	
T 2	Economy transformer	
T 3	Ignition transformer	
V 3	Electric load relay (Solid-state relay)	
V 4	Electric load relay (Solid-state relay)	
V 20	MH lamp	
X 1	Line connector	
X 2	Line connector	
X 3	Line connector	
Y 1	Solenoid valve	
Y 2	Solenoid valve	
Z 1	Interference suppression filter	
Z 2	Interference suppression filter	