High voltage relay unit EHU 103

A product of BALZERS AG, Balzers

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ATTENTION !

Since the unit is not encased in a metal box, it is important to instal it into an appropriate metal cabinet covered in all round and provided with limit switches. Other units have to be installed at least 88 mm below the EHU 103 and provided with a metal cover on top. The cabinet front between the two units has to be closed with a blanking plate and marked with a danger arrow.

In the rack cabinets of the EHV 110 or EHV 110 A, high voltage supply units, the EHU 103 mounts best immediately on top of the high voltage part.

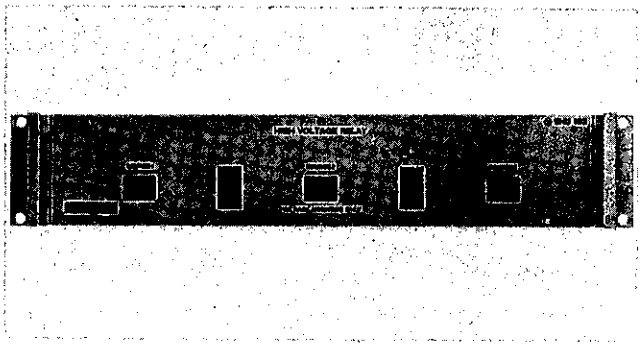


Fig. 1 EHU 103

1. FUNCTION

The EHU 103, high voltage relay unit, is required when evaporation sources in 2 or 3 coating plants are supplied by a single EHV, high voltage supply unit.

The necessary power for the EHU 103 is supplied by the EHV, and according to the circuit arrangement it is conducted over the corresponding high voltage relay to the respective sources in the coating plant.

If the high voltage supply of one coating unit is switched off by the high voltage relay (K 13, K 15 or K18) in the EHU, the high voltage parts of this unit will be grounded automatically over a second high voltage relay (K 14, K 16 or K 19). This ground relay (K 14, K 16 or K19) is monitored by the relay K 2 (on p-c board E 1, E 2 or E 5), i.e. the high voltage can only be conducted to the coating unit through the high voltage relay (K 13, K 15 or K 18) when the relay K2 (on p-c board E 1, E 2 or E 5) has dropped. Before the relay K 1 (on relay board E 1, E 2 or E 5) can switch the high voltage to the coating unit, it is necessary that the ground relay (K 14, K 16 or K 19) has switched over (the high voltage installation is no longer grounded). This excites the relay K 2 (on p-c board E 1, E 2 or E 5) which, on the other hand, switches the high voltage relay (K 13, K 15 or K 18). The high voltage which is now switched on excites the high voltage monitoring relay (K 11, K 12 or K 17) over the high voltage distributor (4 high voltage resistors 2.4 MΩ per switch group) (R 11-14, R 15-18 and R 19-22, resp.) and thus the relays K 3 and K 4 (on relay board E 1, E 2 or E 5) will be excited too. It is this switching process which produces the holding contact for the relay K 1 (on relay board E 1, E 2 or E 5). If the switching pulse is shorter than the switching process, the high voltage will be switched off again.

The contacts of the relay K 4 (on relay board E 1, E 2 or E 5) can be used as interlock contacts (HV-interlock). For this, the switch contact has to be conducted from relay print E 1 (high voltage output HV 1) to the socket J3; from relay board E 2 (high voltage output HV 2) to the socket J4; and from relay board E 5 (high voltage output HV 3) to socket J6.

Thus, this contact can be used to interlock e.g. the venting valve, i.e. air can be admitted to the vacuum chamber only when the high voltage of this chamber is switched off.

2. DESCRIPTION

2.1. Front panel:

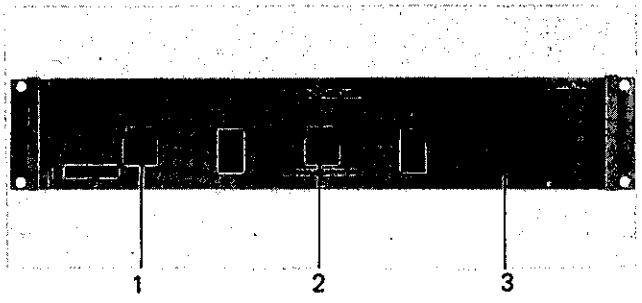


Fig. 2 Front panel EHU 103

1 Signal lamp SOURCE 1
lights when high voltage is applied to the HV 1 output

2 Signal lamp SOURCE 2
lights when high voltage is applied to the HV 2 output

3 Signal lamp SOURCE 3
lights when high voltage is applied to the HV 3 output

2.2. Rear panel:

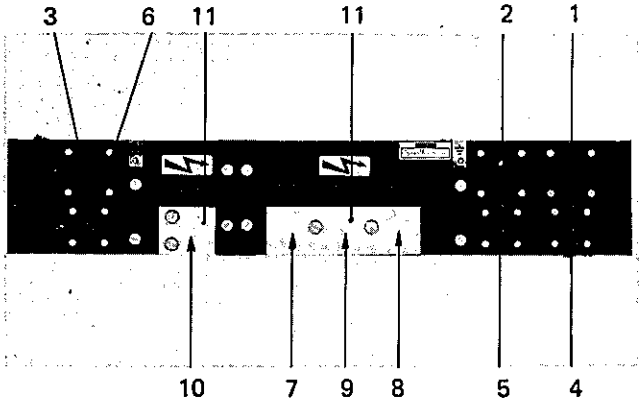


Fig. 3 Rear panel EHU 103

1 Socket J 1, input for the control cable from EKS No. 1, socket J 6

2 Socket J 2, input for control cable from EKS No. 2, socket J 6

3 Socket J 5, input for control cable from EKS No. 3, socket J6

4 Socket J 3, free switch contact from high voltage output HV 1; to be used as interlock for external circuits, e.g. air-inlet valve interlock is operative when the high voltage is applied to the HV 1, high voltage output

5 Socket J 4, like socket J 3, but from HV 2 output

6*) Socket J 6, like socket J 3, but from HV 3 output

7 Terminal screw HVO, high voltage input from EHV high voltage unit

8 Terminal screw HV 1, high voltage output 1; the high voltage cable is conducted over the appertaining transducer in the EHV to evaporation source No. 1 in plant 1.

9 Terminal screw HV 2, high voltage output 2, the high voltage cable is conducted over the appertaining transducer in the EHV to evaporation source No. 2 in plant 2

10*) Terminal screw HV 3, high voltage input 3, the high voltage cable is conducted over the appertaining transducer in the EHV to evaporation source No. 3 in plant 3.

11 Teflon cover for the high voltage connections HV0, HV1, HV2, HV3.

*) Only available when the accesory unit for the 3rd evaporation source has been installed.

2.3. Interiour components:

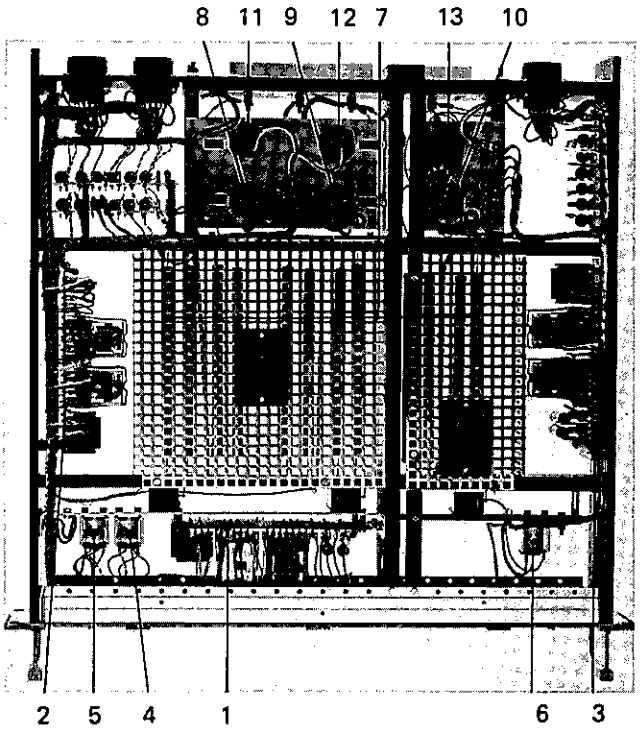


Fig. 4 Inside view EHU 103

1 Relay board E 1 for evaporation source No. 1

2 Relay board E 2 for evaporation source No. 2

3*) Relay board E 5 for evaporation source No. 3

4 High voltage monitor relay K 11 for evaporation source No. 1

5 High voltage monitor relay K 12 for evaporation source No. 2

6*) High voltage monitor relay K 17 for evaporation source No. 3

7 High voltage resistors R 11 - R 22, 4 x 2,4 MΩ per source

8 High voltage grounding relay K 14 for evaporation source No. 1

9 High voltage grounding relay K 16 for evaporation source No. 2

10*) High voltage grounding relay K 19 for evaporation source No. 3

11 High voltage relay K 13 for evaporation source No. 1

12 High voltage relay K 15 for evaporation source No. 2

13*) High voltage relay K 18 for evaporation source No. 3

3. INSTALLING THE ACCESSORY UNIT FOR 3 EVAPORATION SOURCES IN 3 COATING PLANTS.

a Dismount the right side panel and the right rear panel of the rack module (basic instrument) and incorporate the accessory unit, using the same screws.

b Screw the square bar of the accessory unit to the upper longitudinal stringer at the front of the rack module.

c Connect the HV 0 output of the high voltage relay to the HV 0 output on the rear panel of the basic unit (see Fig. 3, item 7 and the enclosed diagram for the EHV 103).

d Connect the signal lamp "SOURCE 3" with the prepared cables of the accessory unit.

e Glue the sticker comprised in the kit over the type shield on the rear panel of the basic unit.

f Attach the ground cable between basic unit and accessory unit.

4. OPERATION

Initial operation is made according to the examples for installation and initial operation, e.g. BB 800 066 BE.

In case none of the separate operating instructions applies for the delivered electron beam evaporation system, consult the operating instructions of the individual units.

IMPORTANT:

Before initial operation and after trouble shooting, make sure the Teflon protections for the high voltage terminals on the rear panel are mounted correctly.

5. TROUBLESHOOTING

Fault	Cause	Correction
High voltage cannot be switched on over the EKS	High voltage resistors defective	Change the resistors
	Transmitter relay K 11 defective	Change the relay
Although the high voltage is switched on (signal lamp on EHU 103 lights) the emission current cannot be adjusted over the EKS	Relay contact of K 3	Change K 3

6. SPARE PARTS

Please order your spare parts according to the enclosed spare parts list.

Always state type and serial number as specified on the name plate of the unit.

Ordering example:

3 lamps T 5.5, 60 V, Code No. B 5005 605 59 as to spare parts list BB 800 074 E/1 , item 10.

	Description Teil	Item Pos.	Code-No.	Bestell-Nr.	S	Remarks Bemerkungen
3	Relay board / Relaisprint	1	BG 241 981–U			
3	Delivery gripper print / Spannungsableiterprint	2	BG 241 029–U			
6	Vacuum relay / Vakuumrelais RB 1E, 26,5 VDC N300	3	B 4786 501 VJ			
3	Relay / Relais AZ 20–49–1 AST, 2 kΩ	4	B 4782 761 SA			
		5				
3	Lightning arrester / Überspannungsableiter UA 300	6	B 5013 800 27			
3	Socket / Fassung to/zu UA 300	7	B 5024 851 CA			
3	Lamp holder / Signallampe 01–040	8	B 4683 412			
3	Lens / Kalotte 01–901 green/grün	9	B 4683 473–K			
3	Lamp / Glühlampe T5,5, 60 V, 0,03 A	10	B 5005 605 59			
		11				
12	Restistor / Widerstand 1 %, 15 W, 2,4 MΩ	12	B 4824 624 WM			
12	Insulator / Isolator	13	B 4624 211 11			
		14				
3	Socket / GS-Dose, MS 3102–20–29 P	15	B 4722 682 MC			
3	Socket / GS-Dose, MS 3102–145–2 P	16	B 4722 206 MC			
		17				
3	Lightning arrester / Überspannungsableiter UA 300	18	B 5013 800 77	enclosed / enthalten in Pos. 2		
3	Relay / Relais FR 11 P, 110 V, 50–60 Hz	19	B 4783 115 KA	enclosed in item 1		
1	Relay / Relais V23 154N–D0720–W055, 550 Ohm	20	B 4782 474 BB	in Pos. 1 enthalten		

EHU 103 für 2 Quellen / EHU 103 for 2 Sources — BGM 06 752

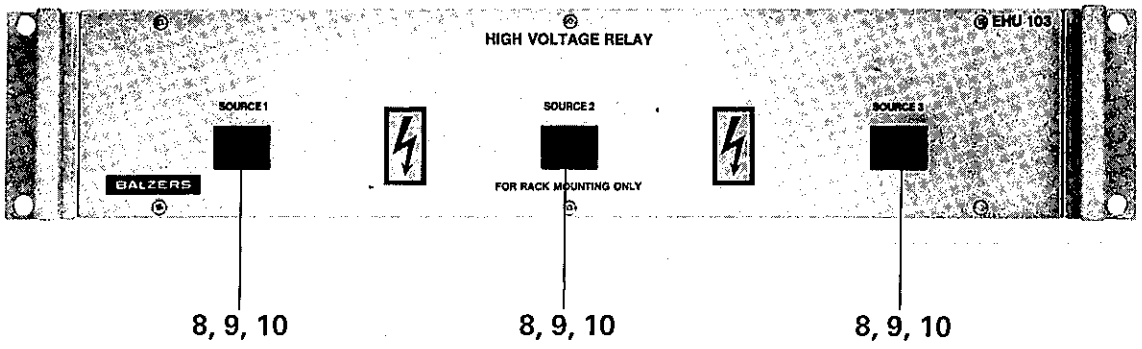
EHU 103 für 3 Quellen / EHU 103 for 3 Sources — BGM 06 753

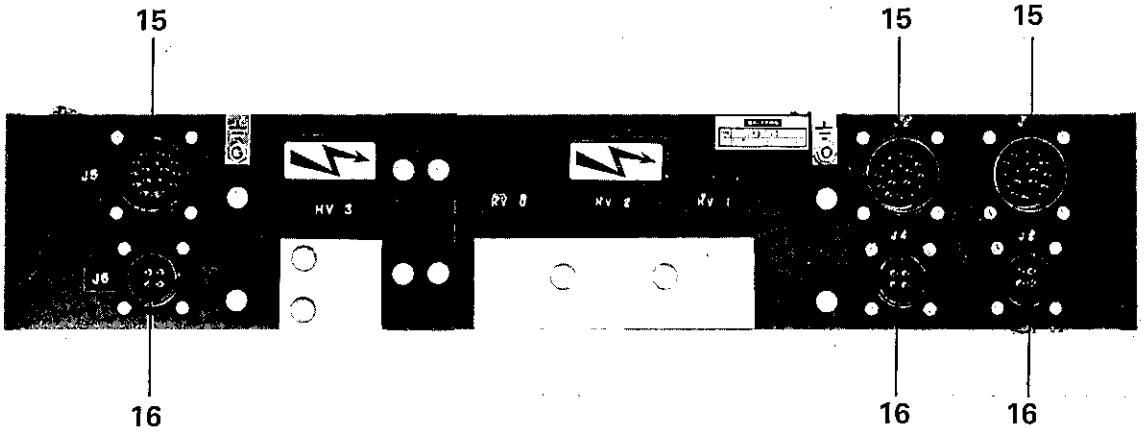
Gültig für u. ab Fabr. Nr. 74
Valid from serial number 74 onwards

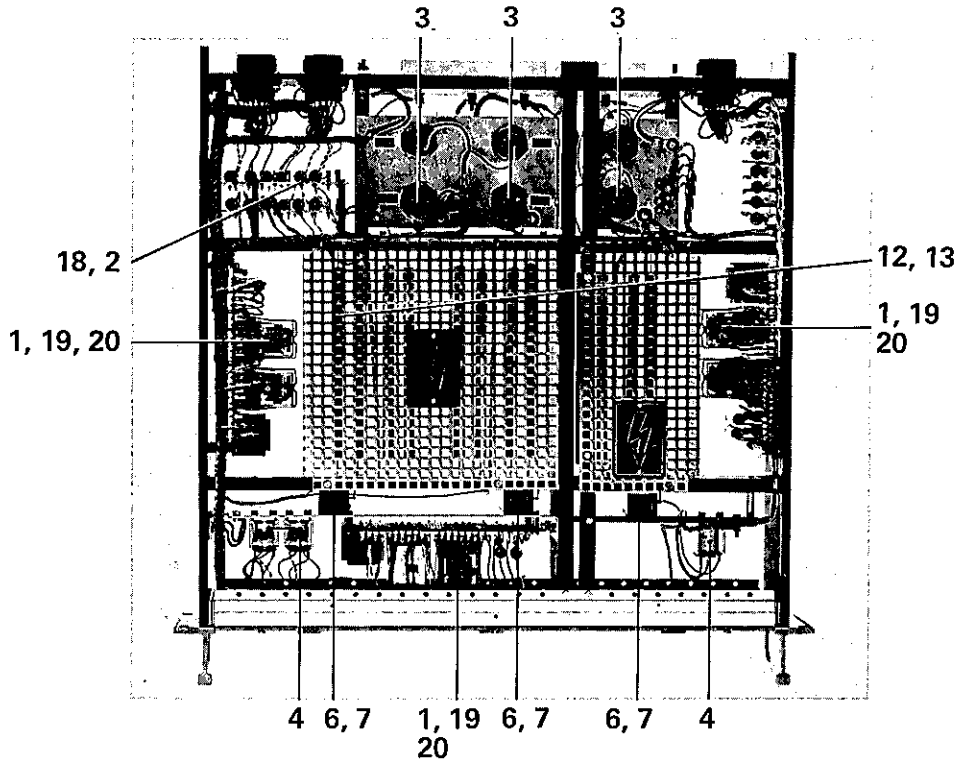
Spare Parts for / Ersatzteile zu

High voltage relay / Hochspannungsschaltgerät EHU 103

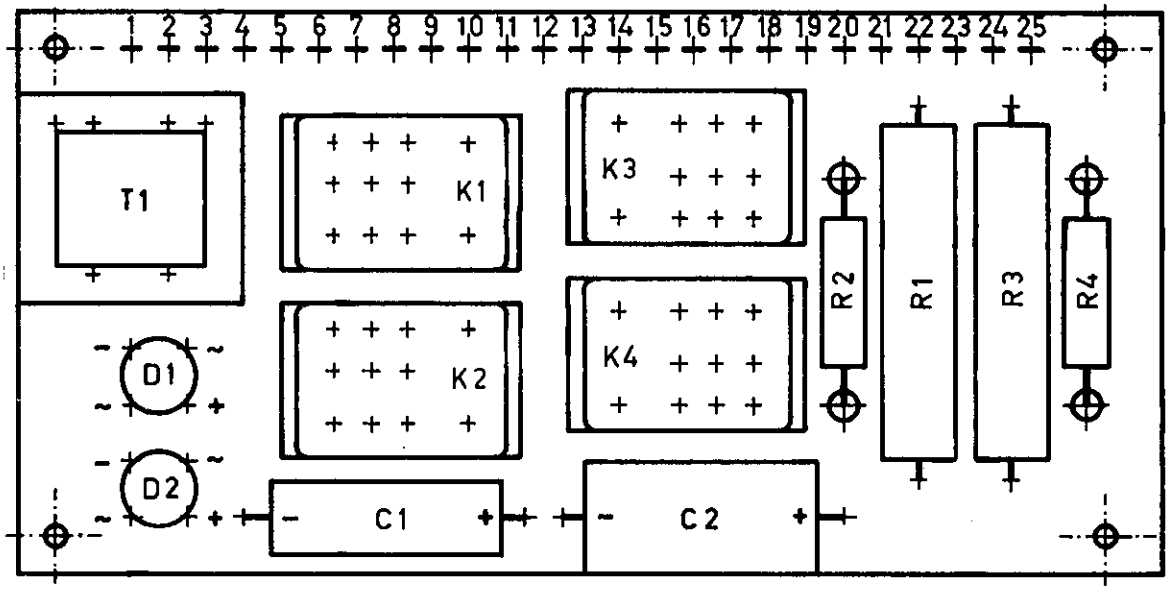
BB 800 074 E/1



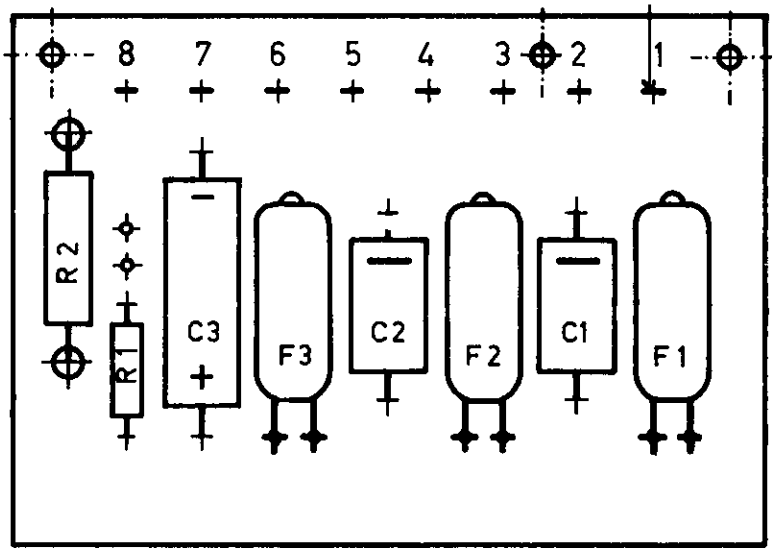




High voltage relay / Hochspannungsschaltgerät EHU 103 BB 800 074 E/2



Relay board / Relaisprint BG 241 025 -U



Delivery gripper print / Spannungsableiterprint BG 241 029 -U