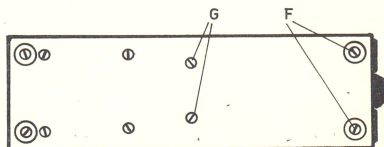
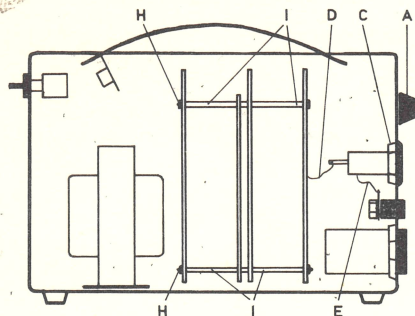


Consisting of:

Electronic Section	2803.1
Position of Components	2803.2
Parts List	2803.3
Circuit Diagram	2803.4

Removal of Metal Case.

Unscrew the three screws at one side and the two lower screws at the other side, then the sideplates can be removed.



Bottom View

Removal of Printed Circuits.

1. Remove switch knob A.
2. Unsolder the yellow wires D to the output sockets, unscrew the nut C and remove the socket.
3. Disconnect yellow wire E from Pol. Voltage socket.
4. Remove screws F and G at the bottom, and the printed circuit can now be turned out of the case.
5. Unscrew the screws H, remove spacer I and the Printed Circuits can be removed one at a time.
6. For removing XC 0289, disconnect the two wires from XC 0288.

Trouble Shooting.

If the reason for a fault is not an obvious one such as a dead tube or transistor, broken down resistor, blown or disconnected fuse etc., then first test the voltages of all the transistors and compare them with the voltages shown in the circuit diagram in order to localize the defect. Should this method of finding the fault prove unsuccessful, then check the instrument by adopting the method described in the adjustment procedure. When the trouble has been found and remedied, the voltages and adjustments, which are influenced by the remedy, must be rechecked.

The tolerances stated in the instructions can only be used as a guide for adjustment and control, but any deviations must not be corrected without being sure that the tolerances of the instruments used for making the adjustment are so small as to have no influence on the measurements.

The instructions in this Manual are given purely as a guide to the service of equipment with minor faults. Some faults, as f.inst. small deviations in tolerances require for their correction special control equipment and extensive experiences, and in these cases it is necessary to send the instrument to the factory.

Spare Parts.

Please state type and serial number of apparatus when spare parts are ordered.

Instruments Necessary for Service and Repair.

Multimeter (50 μ A)
Beat Frequency Oscillator type 1022
(" " " " 1013)
(" " " " 1017)
Frequency Analyzer type 2107
(Vacuum Tube Voltmeter type 2409)

Channel 1 and Channel 2 of the Two-Channel Power Supply type 2803 are electrically equal. They have to be checked in the same way and to keep the same tolerances. In this Service Instruction the adjustment procedure is described for Channel 1.

Attention. If the instrument is used at higher or lower frequencies than 20-20,000 Hz, Frequency Response and Cross-talk should be checked at: Low frequency by means of a Beat Frequency Oscillator type 1017.

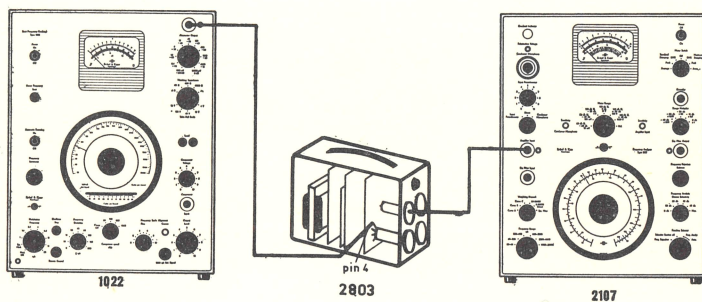
High frequency by means of a Beat Frequency Oscillator type 1013 and a Electronic Voltmeter type 2409.

1.1. DC Voltages

Polarisation Voltage:	Across C 13 : 390 V
	" V 1 - V 3: 245 V
	" V 2 - V 3: 165 V
	On POL. VOLTAGE socket: 200 V, if necessary adjust P 1.
HT Voltage Supply:	Across C 10: 190 V
	" C 11: 100 V
	" C 8: 125 V (160 V without cathode follower connected to input).
	V 11 emitter : 160 V
	V 11 emitter-base: 0,7 V
Filament Voltage Supply:	Across C 7 : 20 V
	" C 3 : 14 V
	V 13 emitter : 12,6 V
	V 13 emitter-base: 0,6 V
	V 6 emitter-base: 0,8 V
Emitter Follower:	V 9 emitter : 55 V
	V 9 emitter-V 7 base: 1,2 V
Multivibrator:	Across R 1: 0,5 V

Switch FUNC. SELECTOR to "Chopped Int. Control".

Tolerance: $\pm 10\%$ except Pol. Voltage, which should be exact 200 V.



1.2. Signal Attenuation.

FUNC. SELECTOR: "Input 1-Output 1"
SIGNAL ADJ. 1: "Fully Clockwise"

- Connect type 1022 direct to type 2107.
Adjust the input voltage at 1000 Hz for an 18 dB deflection on type 2107 (10 V Range).
- Connect type 2803 as shown.
Deflection on type 2107: 17,9-18 dB.

1.3. Frequency Response.

FUNC. SELECTOR: "Input 1-Output 1"
SIGNAL ADJ. 1: "Fully Clockwise"

Frequency: 1000 Hz. Adjust the input voltage for an 18 dB deflection on type 2107 (10 V Range).

Vary the frequency from 20-20,000 Hz.

Deflection on type 2107: 18 dB.

Tolerance: $\pm 0,2$ dB (+ tolerance of 1022: 0,3 dB).

If the instrument is used at higher or lower frequencies, check the limit at 2 Hz and 200 kHz.

1.4. Distortion.

FUNC. SELECTOR: "Input 1-Output 1"
SIGNAL ADJ. 1: "Fully Clockwise"

Input signal: 10 V, 1000 Hz.

Distortion: Max. 1% 2nd harmonic.
0,5% 3rd harmonic.

1.5. Cross-talk.

a. FUNC. SELECTOR: "Input 1-Output 1"
SIGNAL ADJ. 1: "Fully Clockwise"

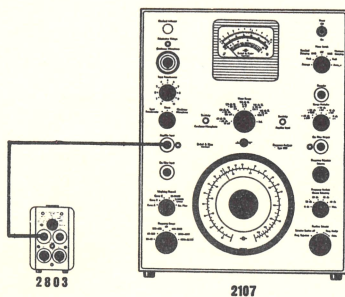
Input signal: 10 V, 1000 Hz.

Output Voltage: 10 V.

b. FUNC. SELECTOR to "Input 2-Output 1"
SIGNAL ADJ. 1 to "Fully Counter-Clockwise"

Output voltage: Min. 80 dB below 10 V.

Check also at frequencies 20-20,000 Hz and if necessary at 4Hz and 100 kHz.



1.6. Hum.

FUNC. SELECTOR: "Input 1-Output 1"
SIGNAL ADJ. 1: "Fully Counter-Clockwise"

The instrument must be in its case or in other way effectively screened.

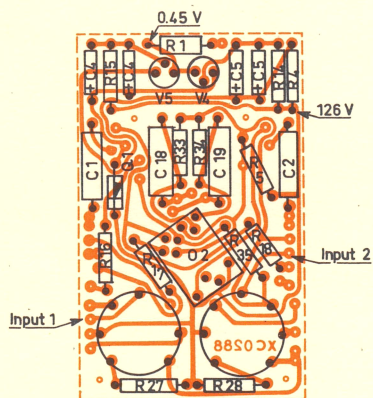
Hum: Max. 8 μ V at 50, 100 and 150 Hz.

1.7. Int. Control Function.

FUNC. SELECTOR: "Chopped, int. Control"

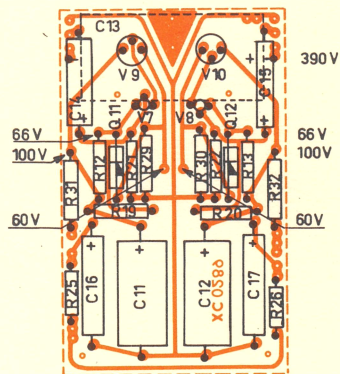
Check with a watch the frequency of the multivibrator: 0,5 Hz.

Noise signal: Max. 3 mV (2107 switched to RMS, fast).



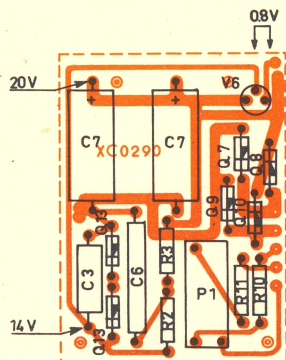
Multivibrator

Printed Circuit XC 0288



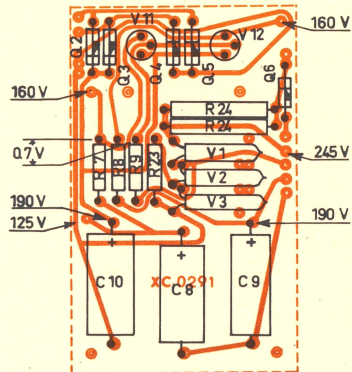
Emitter Follower

Printed Circuit XC 0289



Filament Voltage Supply

Printed Circuit XC 0290



H.T. Voltage Supply

Printed Circuit XC 0291

CIRCUIT
DIAGRAM
REF.

COMPONENT
TYPE

STOCK
REF.

CIRCUIT
DIAGRAM
REF.

COMPONENT
TYPE

STOCK
REF.

CAPACITORS:

C 1,2	Electrolytic	5 μ F/ 70 V	CE 0200
C 3	"	100 μ F/ 15 V	CE 0310
C 4,5	"	8 μ F/ 40 V	CE 0414
C 6	"	100 μ F/ 25 V	CE 0415
C 7	"	400 μ F/ 40 V	CE 0417
C 8,9	"	40 μ F/200 V	CE 0600
C 10	"	32 μ F/250 V	CE 0711
C 11,12	"	32 μ F/150 V	CE 2038
C 13	"	16 μ F/450 V	CE 6846
C 14,15	Paper	2,2 μ F/100 V	CP 0014
C 16,17	Polyester	0,22 μ F/400 V	CS 0117
C 18,19	Paper	1 μ F/100 V	CP 0015

RESISTORS:

R 1	Carbon	1/3 W	10%	25 Ω	
R 2	"	"	5%	310 Ω	
R 3	"	"	"	700 Ω	
R 4	"	"	10%	700 Ω	
R 5	"	"	"	1,25 k Ω	
R 7,8	"	"	"	15 k Ω	
R 9	"	"	"	20 k Ω	
R 10	"	"	5%	25 k Ω	
R 11	"	"	10%	20 k Ω	
R 12,13	"	"	5%	31,5 k Ω	
R 14,15	"	"	10%	90 k Ω	
R 16-18	"	"	"	200 k Ω	
R 19,20	"	"	5%	400 k Ω	
R 21,22	"	"	"	600 k Ω	
R 23	"	"	10%	2M Ω	
R 24,24	"	1/2 W	5%	80 k Ω	
R 25,26	Metal			20M Ω	RH 0002
R 27,28	Wire	5,5 W		30 Ω	RX 0309
R 29-32	"	"	5%	4,7 k Ω	RX 0315
R 33-35	Carbon	1/3 W	10%	100 k Ω	

POTENTIOMETERS:

P 1	Pol. Voltage	wire lin.	25 k Ω	PG 3251
P 2,3	Signal Adj.	" "	50 k Ω	PG 3506

SWITCHES-RELAY:

N 1	Power On-Off		NN 0014
O 1	Power Voltage Selector		OA 0028
O 2	Relay		OC 0005
O 3	Function Selector		OR 2803

RECTIFIERS:

Q 1-6	Silicon	1200 V/0,15 A	QV 0025
Q 7-10	"	200 V/ 0,6 A	QV 0502
Q 11,12	Zener	6,8 V/ 30 mA	QV 1106
Q 13	"	7 V/ 10 mA	QV 1007

TRANSISTORS-TUBES, etc.:

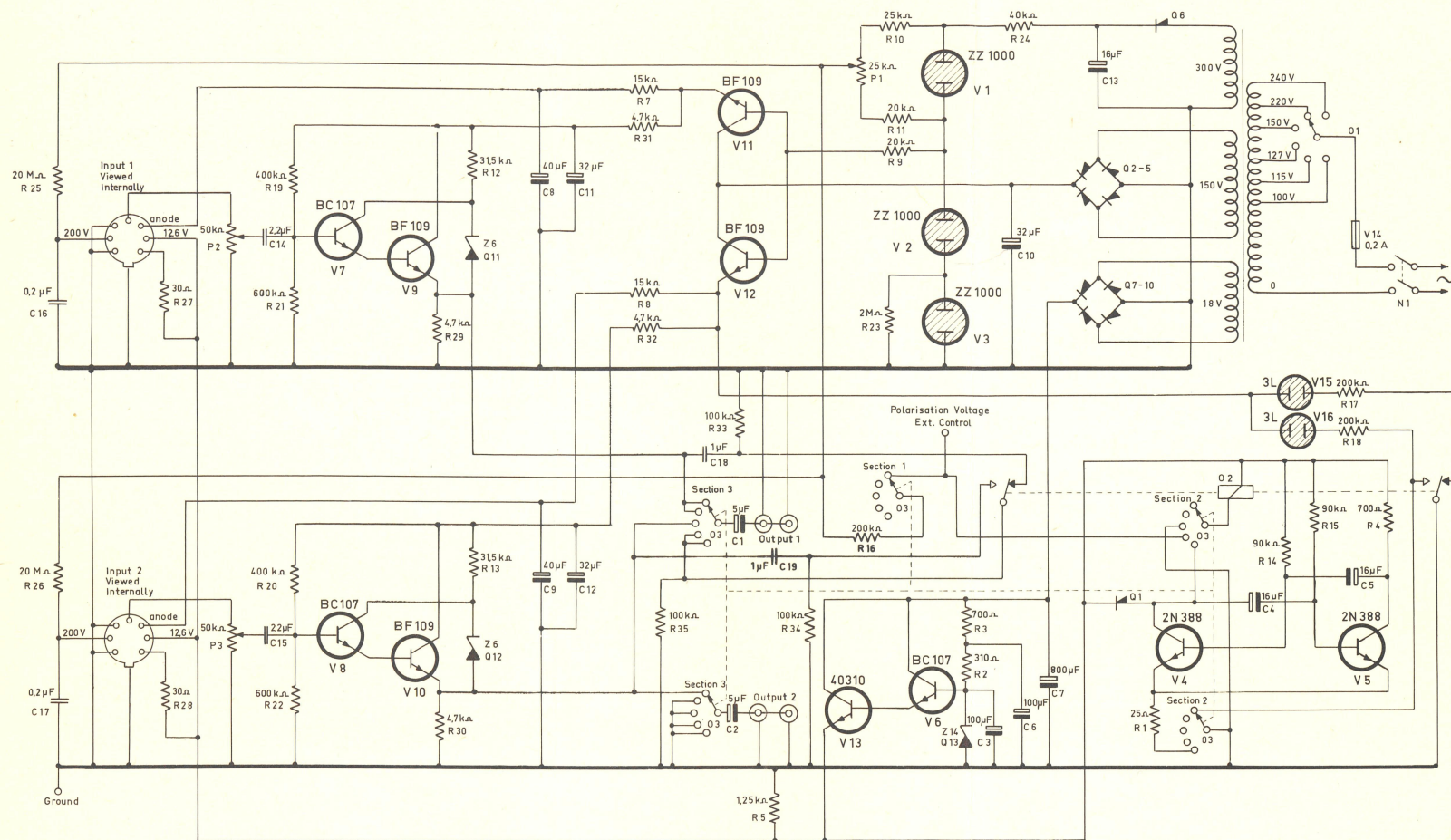
V 1-3	Stabilizer	ZZ 1000	VA 0088
V 4-5	Germanium Trans.	2N388	VB 0018
V 6-8	Silicon	BC107	VB 0032
V 9-12	"	BF109	VB 0039
V 13	"	40310	VB 0256
V 14	Fuse	0,2 A	VF 0012
V 15,16	Neon Lamp	90 V	VA 0072

PRINTED CIRCUITS:

Multivibrator	XC 0288
Emitter Follower	XC 0289
Filament Voltage Supply	XC 0290
H.T. Voltage Supply	XC 0291
Signal Adj. Pot. m.	XC 0297
XC 0288 with components	8002803
XC 0289 "	8012803
XC 0290 "	8022803
XC 0291 "	8032803
XC 0297 "	8042803

MISCELLANEOUS:

Bakelit knob 19 mm	SN 0600
Power Cord EUR.	AN 0005
Power Cord USA	AN 0006
Power Transformer	TN 0017
Socket Relay	JJ 0012
Output Jack.	JJ 0031
Rubber Feet	DF 7007
Handle	DH 0019



03: Function Selector

(Shown in pos. 1)

- 1: Input 1-Output 1
- Input 2-Output 2
- 2: Input 1-Output 1
- 3: Input 2-Output 1
- 4: Chopped-Ext. Control
- 5: Chopped-Int. Control

1-6-66	192697		

Brüel & Kjær
Copenhagen



Two-Channel Power Supply
Type 2803