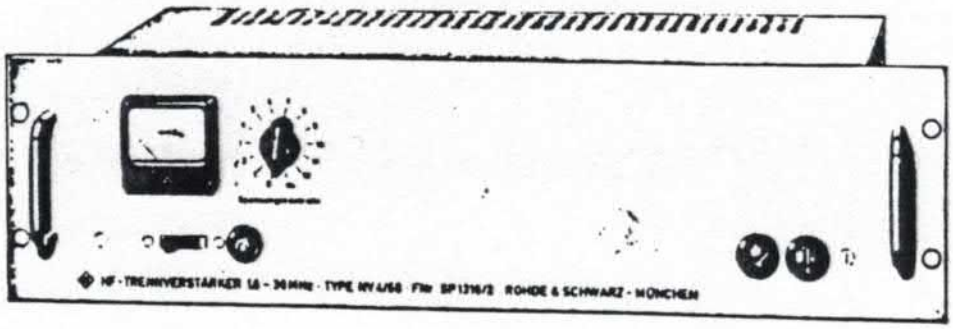

Front view of HF Multi-Coupler Type NV 4/60

1. Table of Models

Type	Dimensions	Type of input	Input impedance
NV 4/50	Standard rack-mounting unit 520 mm DIN 41 191	unbalanced	50 Ω
NV 4/60			60 Ω
NV 4/70			70 Ω
NV 4/100 U			100 Ω
NV 4/100 S		balanced	100 Ω
NV 4/200			200 Ω
NV 4/600			600 Ω
NV 4/800			800 Ω
NV 4/50 Z	19" rack-mounting unit	unbalanced	50 Ω
NV 4/50 Z/1			50 Ω
NV 4/60 Z			60 Ω
NV 4/70 Z			70 Ω
NV 4/100 UZ			100 Ω
NV 4/100 SZ		balanced	100 Ω
NV 4/200 Z			200 Ω
NV 4/600 Z			600 Ω
NV 4/800 Z			800 Ω

Input impedance and type of input dependent on type of Multi-Coupler

for NV 4/50 and NV 4/50 Z or NV 4/50 Z/1 . . .	50 Ω unbalanced
for NV 4/60 and NV 4/60 Z	60 Ω unbalanced
for NV 4/70 and NV 4/70 Z	70 Ω unbalanced
for NV 4/100 U and NV 4/100 UZ	100 Ω unbalanced
for NV 4/100 S and NV 4/100 SZ	100 Ω balanced
for NV 4/200 and NV 4/200 Z	200 Ω balanced
for NV 4/600 and NV 4/600 Z	600 Ω balanced
for NV 4/800 and NV 4/800 Z	800 Ω balanced
Output impedance	60 Ω unbalanced

Spurious frequencies:

Combination frequencies at the outputs with 2 frequencies of equal EMF

(a) Combination frequency $f_1 \pm f_2$ for EMF less than 70 mv	
in the frequency range 1.6 to 25 MHz	80 dB down [1]
in the frequency range 25 to 30 MHz	75 dB down [1]
(b) Combination frequency $2f_1 \pm f_2$ or $2f_2 \pm f_1$ for EMF less than 80 mv	90 dB down [1]

Cross modulation:

An interfering signal arising with an input EMF of 3 v causes a cross modulation factor . . . . . less than 10%

All values for the input EMF refer to an input impedance of 60 Ω.

Cable connection for input, dependent on order	
for unbalanced input	socket FHD 11101
	BNC sockets VG 290/U
	UG 290/U
	UG 262/U
for balanced input	socket FHD 12101
Cable connections for outputs, dependent on order . .	socket FHD 11101
	BNC sockets VG 290/U
	UG 290/U
	UG 262/U
Power supply	110/125/220/235 v; 47 to 63 Hz; 65 va

[1]) Minimum of the mean value of all frequency combinations in question

Valves, etc.	12 valves E 88 CC 1 reference tube 85 A 2 1 miniature glow lamp RL 210 2 0.6-amp fuses 0,6 DIN 41571
Weight (of rack-mounting unit)	11 kg
Dimensions: German standard 520-mm	
rack-mounting unit	520 x 134 x 260 mm
English/American standard 19"	
rack-mounting unit	482.5 x 133 x 260 mm

4. Operating Instructions

4.1 Adjustment to the Local Supply Voltage and Connection to the Power Supply

Unless otherwise specified in the order, the set leaves the factory adjusted for operation from 220 v AC supply. For this voltage two 600-ma fuses (0.6 C DIN 41571) are inserted at the lower right of the front panel.

To adapt the set to a 110, 125 or 235 v AC supply, loosen the two knurled screws at the rear and remove the protective cover. For the adjustment the soldered connections on the power transformer must be changed. A label on the transformer indicates which connections are used for the respective voltage, e.g. for 110 v solder the following connections: 1 and 5, 4 and 5, 2 and 3.

The two 600-ma fuses provided for 220 v on the front panel are also used for 235 v. However, for 110 or 125 v two 1-amp fuses (1 C DIN 41571) must be inserted.

For connection of the power supply a terminal strip is provided at the right-hand wall of the set. The neutral wire (earth) must be connected to the terminal marked by the earth symbol.

4.2 Checking the Mechanical Zero of the Meter

In the position 0 of the switch VOLTAGE CHECK (or with the set switched off) the pointer of the meter must be at the mechanical zero. This is the mark at the left end of the scale. The slotted screw recessed in the meter housing serves to correct the zero setting.

4.3 Switching on

The set is switched on by the toggle switch provided at the lower left of the front panel. The small glow lamp at the right side of the power switch serves to check whether an AC voltage is present (toggle switch to the right).

6. Table of Replaceable Parts (When used without input filter)

Ref. No.	Designation	Ratings	R&S Stock No.
C 5	Capacitor, ceramic	4 pf	CCG 41/4
C 6	Trimmer, air	1 to 5 pf	CV 61504
C 7	Trimmer, air	1 to 5 pf	CV 61504
C 8	Trimmer, air	1 to 5 pf	CV 61504
C 9	Trimmer, air	1 to 5 pf	CV 61504
C 10	Capacitor, ceramic	4 pf	CCG 41/4
C 11	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 12	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 13	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 14	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 15	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 16	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 17	Capacitor, paper	25,000 pf/250 v	CPM 25 000/250
C 18	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 19	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 20	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 21	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 22	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 23	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 24	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 25	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 26	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 27	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 28	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 29	Capacitor, paper, feed-through	25,000 pf/300 v	CPD 25 000/300
C 30	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 31	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 32	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 33	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 34	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 35	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 37	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 38	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 39	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250

Ref. No.	Designation	Ratings	R&S Stock No.
C 40	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 41	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 42	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 43	Capacitor, ceramic	4 pf	CCG 41/4
C 44	Trimmer, air	1 to 5 pf	CV 61504
C 45	Trimmer, air	1 to 5 pf	CV 61504
C 46	Trimmer, air	1 to 5 pf	CV 61504
C 47	Trimmer, air	1 to 5 pf	CV 61504
C 48	Capacitor, ceramic	4 pf	CCG 41/4
C 49	Capacitor, MP	0.1 µf/500 v	CMR 0,1/500
C 50	Capacitor, MP	0.25 µf/500 v	CMR 0,25/500
C 51	Capacitor, ceramic, feed-through	2000 pf	CFS 2000
C 52	Capacitor, ceramic, feed-through	2000 pf	CFS 2000
C 53	Capacitor, MP	16 µf/350 v	CMR 16/350
C 54	Capacitor, MP	16 µf/350 v	CMR 16/350
C 55	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 56	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 57	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 58	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 59	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 60	Capacitor, paper	10,000 pf/250 v	CPM 10 000/250
C 61	Capacitor, ceramic	1000 pf	CCG 94/1000
C 62	Capacitor, ceramic	1000 pf	CCG 94/1000
C 63	Capacitor, ceramic	1000 pf	CCG 94/1000
C 64	Capacitor, ceramic	1000 pf	CCG 94/1000
C 65	Capacitor, ceramic	1000 pf	CCG 94/1000
C 66	Capacitor, ceramic	1000 pf	CCG 94/1000
C 67	Capacitor, ceramic	1000 pf	CCG 94/1000
C 68	Capacitor, ceramic	1000 pf	CCG 94/1000
C 69	Capacitor, ceramic	1000 pf	CCG 94/1000
C 70	Capacitor, ceramic	1000 pf	CCG 94/1000
C 71	Capacitor, ceramic	1000 pf	CCG 94/1000
C 72	Capacitor, ceramic	1000 pf	CCG 94/1000
Gl 1	Rectifier		4 x GK/Si 3
Gl 2	Diode, crystal		GK/OA128
I 1	Meter, moving-coil	100 µa	iNS 10108

Ref. No.	Designation	Ratings	R & S Stock No.
K 1	Cable, RF		LK 126/6
K 2	Cable, RF		LK 126/6
K 3	Cable, RF		LK 126/6
K 4	Cable, RF		LK 126/6
K 5	Cable, RF		LK 126/6
K 6	Cable, RF		LK 126/6
L 5	Coil		NV 4–1.6
L 6	Choke, anode		NV 4–1.7
L 7	Choke, anode		NV 4–1.7
L 8	Choke, anode		NV 4–1.7
L 9	Choke, anode		NV 4–1.7
L 10	Choke, anode		NV 4–1.7
L 11	Choke, anode		NV 4–1.7
L 12	Choke, anode		NV 4–1.7
L 13	Choke, anode		NV 4–1.7
L 14	Choke, anode		NV 4–1.7
L 15	Choke, anode		NV 4–1.7
L 16	Choke, anode		NV 4–1.7
L 17	Choke, anode		NV 4–1.7
L 18	Coil		NV 4–1.6
L 19	Choke		NV 4–1.9
L 20	Choke		NV 4–1.9
L 21	Choke		NV 4–1.9
L 22	Choke		NV 4–1.9
L 23	Choke		NV 4–1.9
L 24	Choke		NV 4–1.9
L 25	Choke		NV 4–1.9
L 26	Choke		NV 4–1.9
L 27	Choke		NV 4–1.9
L 28	Choke		NV 4–1.9
L 29	Choke		NV 4–1.9
L 30	Choke		NV 4–1.9
L 31	Choke		DB 220/2
L 32	Choke		DUF 411/200
L 33	Choke		DUF 411/200
L 34	Choke		DUF 411/200
L 35	Choke		DUF 411/200
L 36	Coil, peaking		NV 4–1.14
L 37	Coil, peaking		NV 4–1.14

Ref. No.	Designation	Ratings	R & S Stock No.
R 1	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 2	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 3	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 4	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 5	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 6	Resistor, depos. carbon	80 Ω/0.05 w	WF 80/0,1
R 7	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 8	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 9	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 10	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 11	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 12	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 13	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 14	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 15	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 16	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 17	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 18	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 19	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 20	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 21	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 22	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 23	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 24	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 25	Resistor, depos. carbon	800 Ω/0.25 w	WF 800/0,25
R 26	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 27	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 28	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 29	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 30	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 31	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 32	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 33	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 34	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 35	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 36	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 37	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 38	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 39	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5

Ref. No.	Designation	Ratings	R & S Stock No.
R 40	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 41	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 42	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 43	Resistor, depos. carbon	1 kΩ ± 1%/0.5 w	WF 1 k/1/0,5
R 44	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 45	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 46	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 47	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 48	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 49	Resistor, depos. carbon	400 Ω ± 1%/0.25 w	WF 400/1/0,25
R 50	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 51	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 52	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 53	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 54	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 55	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 56	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 57	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 58	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 59	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 60	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 61	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 62	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 63	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 64	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 65	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 66	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 67	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 68	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 69	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 70	Resistor, depos. carbon	30 Ω/0.05 w	WF 30/0,05
R 71	Resistor, depos. carbon	80 Ω/0.1 w	WF 80/0,1
R 72	Resistor, depos. carbon	10 kΩ/0.1 w	WF 10 k/0,1
R 73	Resistor, depos. carbon	5 kΩ/0.25 w	WF 5 k/0,25
R 74	Resistor, depos. carbon	800 Ω/0.25 w	WF 800/0,25
R 75	Resistor, depos. carbon	25 kΩ/1 w	WF 25 k/1
R 76	Resistor, depos. carbon	60 kΩ ± 1%/0.5 w	WF 60 k/1/0,5
R 77	Resistor, depos. carbon	16 kΩ ± 1%/0.5 w	WF 16 k/1/0,5
R 78	Resistor, depos. carbon	3 MΩ/0.5 w	WF 3 M/0,5

Ref. No.	Designation	Ratings	R&S Stock No.
R 79	Resistor, depos. carbon	16 kΩ/0.25 w	WF 16 k/0,25
R 80	Resistor, depos. carbon	8 kΩ ± 1%/0.5 w	WF 8 k/1/0,5
R 81	Resistor, depos. carbon	125 kΩ ± 1%/0.5 w	WF 125 k/1/0,5
R 82	Resistor, depos. carbon	216 kΩ ± 1%/0.5 w	WF 216 k/1/0,5
R 83	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 84	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 85	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 86	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 87	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 88	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 89	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 90	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 91	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 92	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 93	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 94	Resistor, depos. carbon	1 MΩ/0.1 w	WF 1 M/0,1
R 95	Resistor, depos. carbon	12.5 kΩ/0.25 w	WF 12,5 k/0,25
Rl 1	Lamp, glow, miniature	220 v	RL 210
Rö 1	Duotriode		E 88 CC
Rö 2	Duotriode		E 88 CC
Rö 3	Duotriode		E 88 CC
Rö 4	Duotriode		E 88 CC
Rö 5	Duotriode		E 88 CC
Rö 6	Duotriode		E 88 CC
Rö 7	Duotriode		E 88 CC
Rö 8	Duotriode		E 88 CC
Rö 9	Duotriode		E 88 CC
Rö 10	Duotriode		E 88 CC
Rö 11	Duotriode		E 88 CC
Rö 12	Duotriode		E 88 CC
Rö 13	Reference tube		85 A 2
S 1	Power switch assembly		SRK 1
S 2	Switch, rotary, midget		SRW 14110
Si 1	Fuse	0.6 amp	0,6 C DIN 41571
Si 2	Fuse	0.6 amp	0,6 C DIN 41571

Ref. No.	Designation	Ratings	R & S Stock No.
Tr 2	Transformer, RF		NV 4–1.11
Tr 3	Transformer, RF		NV 4–1.11
Tr 4	Transformer, RF		NV 4–1.11
Tr 5	Transformer, RF		NV 4–1.11
Tr 6	Transformer, RF		NV 4–1.11
Tr 7	Transformer, RF		NV 4–1.11
Tr 8	Transformer, power		NV 4–2.2

6.1 Input Filter for NV 4/50 and NV 4/50 Z or NV 4/50 Z/1

C 1	Capacitor, synth. foil	3680 pf ± 1%/250 v	CKS 3680/1/250
C 2	Capacitor, synth. foil	1105 pf ± 1%/500 v	CKS 1105/1/500
C 3	Capacitor, synth. foil	3680 pf ± 1%/250 v	CKS 3680/1/250
C 4	Capacitor, synth. foil	5000 pf ± 1%/125 v	CKS 5000/125
C 73	Capacitor, ceramic	0.5 pf	CCG 11/0,5
C 74	Capacitor, ceramic	8 pf	CCG 68/8
L 1	Coil, filter		NV 4–1.3.5
L 2	Coil, filter		NV 4–1.3.6
L 3	Coil, filter		NV 4–1.3.6
L 4	Coil, filter		NV 4–1.3.5
L 38	Coil, compens.		NV 4 — 1.3.4
Tr 1	Transformer, RF		NV 4 — 1.3.21

6.2 Input Filter for NV 4/60 and NV 4/60 Z

C 1	Capacitor, synth. foil	3065 pf ± 1%/250 v	CKS 3065/1/250
C 2	Capacitor, synth. foil	920 pf ± 1%/500 v	CKS 920/1/500
C 3	Capacitor, synth. foil	3065 pf ± 1%/250 v	CKS 3065/1/250
C 4	Capacitor, synth. foil	5000 pf/125 v	CKS 5000/125
C 73	Capacitor, ceramic	0.5 pf	CCG 11/0,5
C 74	Capacitor, ceramic	8 pf	CCG 68/8
L 1	Coil, filter		NV 4 — 1.3.7
L 2	Coil, filter		NV 4 — 1.3.8
L 3	Coil, filter		NV 4 — 1.3.8
L 4	Coil, filter		NV 4 — 1.3.7
L 38	Coil, compens.		NV 4 — 1.3.4
Tr 1	Transformer, RF		NV 4 — 1.3.22