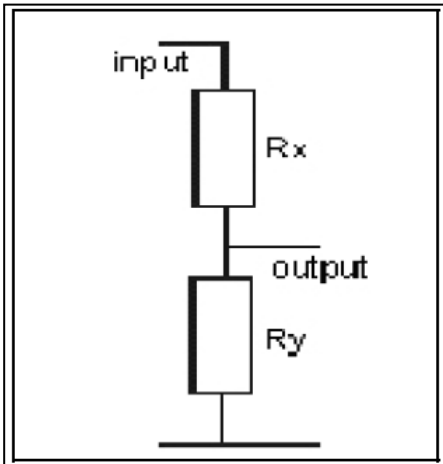


**Hificollective`s Glasshouse resistors values for our 23 & 24 step series/shunt type of stepped attenuators, - 10K, 20K, 25K, 50K,100K & 250K**



Please note that ideal resistor values are listed. So when we select the resistors we select the nearest value. The small adjustments in resistor values are not sonically noticeable. The Elma and Chinese blue are 24 way switches, whereas the Seiden are 23 way switches

HiFiCollective		
10K Shunt Network 23-Step		
Input Resistor (Rx):	10K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	2R7	71
3	5R6	65
4	11R	59
5	22R	53
6	39R	48
7	75R	43
8	110R	39
9	180R	35
10	240R	32
11	360R	29
12	510R	26
13	750R	23
14	1K1	20
15	1K6	17
16	2K4	14
17	3K3	12
18	4K7	10
19	6K8	8
20	10K	6
21	18K	4
22	39K	2
23	Infinity	0

HiFiCollective		
20K & 25K Shunt Network 23-Step		
Input Resistor (Rx):	20K / 25K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	6R8	71
3	14R	65
4	27R	59
5	56R	53
6	100R	48
7	180R	43
8	270R	39
9	470R	35
10	620R	32
11	910R	29
12	1K3	26
13	1K8	23
14	2K7	20
15	4K3	17
16	6K2	14
17	8K2	12
18	12K	10
19	16K	8
20	24K	6
21	43K	4
22	100K	2
23	Infinity	0

HiFiCollective		
50K Shunt Network 23-Step		
Input Resistor (Rx):	50K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	15R	71
3	27R	65
4	56R	59
5	110R	53
6	200R	48
7	360R	43
8	560R	39
9	910R	35
10	1K3	32
11	1K8	29
12	2K7	26
13	3K9	23
14	5K6	20
15	8K2	17
16	12K	14
17	16K	12
18	24K	10
19	33K	8
20	51K	6
21	82K	4
22	180K	2
23	Infinity	0

HiFiCollective		
100K Shunt Network 23-Step		
Input Resistor (Rx):	100K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	27R	71
3	56R	65
4	110R	59
5	220R	53
6	390R	48
7	750R	43
8	1K1	39
9	1K8	35
10	2K4	32
11	3K6	29
12	5K1	26
13	7K5	23
14	11K	20
15	16K	17
16	24K	14
17	33K	12
18	47K	10
19	68K	8
20	100K	6
21	180K	4
22	390K	2
23	Infinity	0

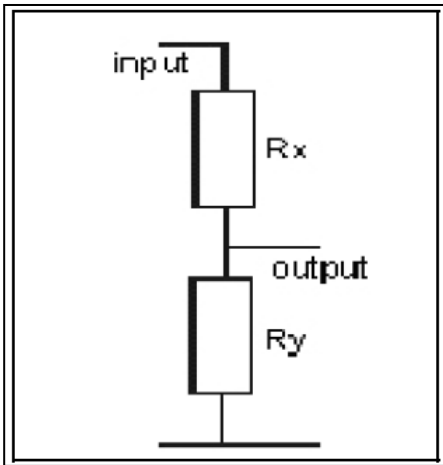
HiFiCollective		
250K Shunt Network 23-Step		
Input Resistor (Rx):	250K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	68R	71
3	140R	65
4	270R	59
5	560R	53
6	1K	48
7	1K8	43
8	2K7	39
9	4K7	35
10	6K2	32
11	9K1	29
12	13K	26
13	18K	23
14	27K	20
15	43K	17
16	62K	14
17	82K	12
18	120K	10
19	160K	8
20	240K	6
21	430K	4
22	1M	2
23	Infinity	0

HiFiCollective		
10K Shunt Network 24-Step		
Input Resistor (Rx):	10K	
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	2R	75
3	3R6	69
4	6R8	63
5	13R	58
6	22R	53
7	39R	48
8	68R	43
9	110R	39
10	180R	35
11	270R	32
12	360R	29
13	510R	26
14	750R	23
15	1K1	20
16	1K6	17
17	2K4	14
18	3K3	12
19	4K7	10
20	6K8	8
21	10K	6
22	18K	4
23	36K	2
24	Infinity	0

<b>HiFiCollective</b>		
<b>20K &amp; 25K Shunt Network 24-Step</b>		
Input Resistor (Rx):		20K / 25K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	4R	75
3	9R	69
4	18R	63
5	33R	58
6	56R	53
7	100R	48
8	180R	43
9	270R	39
10	470R	35
11	620R	32
12	910R	29
13	1K3	26
14	1K8	23
15	2K7	20
16	4K3	17
17	6K2	14
18	8K2	12
19	12K	10
20	16K	8
21	24K	6
22	43K	4
23	100K	2
24	Infinity	0
<b>HiFiCollective</b>		
<b>100K Shunt Network 24-Step</b>		
Input Resistor (Rx):		100K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	18R	75
3	36R	69
4	68R	63
5	130R	58
6	220R	53
7	390R	48
8	680R	43
9	1K1	39
10	1K8	35
11	2K4	32
12	3K6	29
13	5K1	26
14	7K5	23
15	11K	20
16	16K	17
17	24K	14
18	33K	12
19	47K	10
20	68K	8
21	100K	6
22	180K	4
23	390K	2
24	Infinity	0

<b>HiFiCollective</b>		
<b>50K Shunt Network 24-Step</b>		
Input Resistor (Rx):		50K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	9R1	75
3	18R	69
4	36R	63
5	62R	58
6	110R	53
7	200R	48
8	360R	43
9	560R	39
10	910R	35
11	1K3	32
12	1K8	29
13	2K7	26
14	3K9	23
15	5K6	20
16	8K2	17
17	12K	14
18	18K	12
19	24K	10
20	33K	8
21	51K	6
22	91K	4
23	200K	2
24	Infinity	0
<b>HiFiCollective</b>		
<b>250K Shunt Network 24-Step</b>		
Input Resistor (Rx):		250K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	44R	75
3	91R	69
4	180R	63
5	330R	58
6	560R	53
7	1K	48
8	1K8	43
9	2K7	39
10	4K7	35
11	6K2	32
12	9K1	29
13	13K	26
14	18K	23
15	27K	20
16	43K	17
17	62K	14
18	82K	12
19	120K	10
20	160K	8
21	240K	6
22	430K	4
23	1M	2
24	Infinity	0

**Hificollective`s Glasshouse resistors values for our 34 step series/shunt type of stepped attenuators, - 10K, 20K, 25K, 50K,100K & 250K**



Please note that ideal resistor values are listed. So when we select the resistors we select the nearest value. The small adjustments in resistor values are not sonically noticeable.

<b>HiFiCollective</b>		
<b>10K Shunt Network 34-Step</b>		
Input Resistor (Rx):		10K
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	2R	75
3	3R	72
4	4R	69
5	5R	66
6	7R	63
7	10R	60
8	14R	57
9	20R	54
10	28R	51
11	40R	48
12	57R	45
13	80R	42
14	101R	40
15	127R	38
16	161R	36
17	204R	34
18	258R	32
19	327R	30
20	415R	28
21	528R	26
22	673R	24
23	863R	22
24	1K1	20
25	1K4	18
26	1K9	16
27	2K5	14
28	3K4	12
29	4K6	10
30	6K6	8
31	10K	6
32	17K	4
33	39K	2
34	Infinity	0

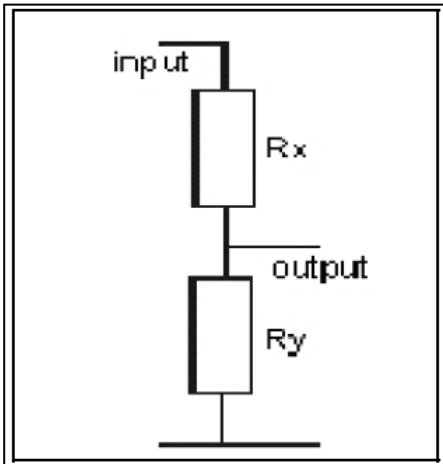
<b>HiFiCollective</b>		
<b>20K &amp; 25K Shunt Network 34-Step</b>		
Input Resistor (Rx):		20K or 25K
Step	Resistor (Ry)	Attenuation (dB)
1	0R	Infinity
2	4R	75
3	6R	72
4	9R	69
5	13R	66
6	18R	63
7	25R	60
8	35R	57
9	50R	54
10	71R	51
11	100R	48
12	141R	45
13	200R	42
14	253R	40
15	319R	38
16	403R	36
17	509R	34
18	644R	32
19	816R	30
20	1K	28
21	1K3	26
22	1K7	24
23	2K2	22
24	2K8	20
25	3K6	18
26	4K7	16
27	6K2	14
28	8K4	12
29	12K	10
30	17K	8
31	25K	6
32	43K	4
33	97K	2
34	Infinity	0

<b>HiFiCollective</b>		
<b>50K Shunt Network 34-Step</b>		
Input Resistor (Rx):		50K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	9R	75
3	13R	72
4	18R	69
5	25R	66
6	35R	63
7	50R	60
8	71R	57
9	100R	54
10	141R	51
11	200R	48
12	283R	45
13	400R	42
14	505R	40
15	637R	38
16	805R	36
17	1K	34
18	1K3	32
19	1K6	30
20	2K	28
21	2K6	26
22	3K4	24
23	4K3	22
24	5K6	20
25	7K2	18
26	9K4	16
27	12K	14
28	17K	12
29	23K	10
30	33K	8
31	50K	6
32	85K	4
33	193K	2
34	Infinity	0

<b>HiFiCollective</b>		
<b>100K Shunt Network 34-Step</b>		
Input Resistor (Rx):		100K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	18R	75
3	25R	72
4	35R	69
5	50R	66
6	71R	63
7	100R	60
8	141R	57
9	200R	54
10	283R	51
11	400R	48
12	566R	45
13	801R	42
14	1K	40
15	1K3	38
16	1K6	36
17	2K	34
18	2K6	32
19	3K3	30
20	4K1	28
21	5K3	26
22	6K7	24
23	8K6	22
24	11K	20
25	14K	18
26	19K	16
27	25K	14
28	34K	12
29	46K	10
30	66K	8
31	100K	6
32	170K	4
33	386K	2
34	Infinity	0

<b>HiFiCollective</b>		
<b>250K Shunt Network 34-Step</b>		
Input Resistor (Rx):		250K
<b>Step</b>	<b>Resistor (Ry)</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	44R	75
3	63R	72
4	89R	69
5	125R	66
6	177R	63
7	250R	60
8	354R	57
9	500R	54
10	707R	51
11	1K	48
12	1K4	45
13	2K	42
14	2K5	40
15	3K2	38
16	4K6	36
17	5K1	34
18	6K4	32
19	8K2	30
20	10K	28
21	13K	26
22	17K	24
23	22K	22
24	28K	20
25	36K	18
26	47K	16
27	62K	14
28	84K	12
29	116K	10
30	165K	8
31	251K	6
32	427K	4
33	966K	2
34	Infinity	0

**Hificollective`s Glasshouse resistors values for our 46 step series/shunt type of stepped attenuators, - 10K, 20K, 25K, 50K,100K, 250K, 500K**



Please note that ideal resistor values are listed. So when we select the resistors we select the nearest value. The small adjustments in resistor values are not sonically noticeable.

<b>HiFiCollective</b>		
<b>10K Shunt Network 46-Step</b>		
Input Resistor:		10K
<b>Step</b>	<b>Resistor</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	1R8	75
3	2R5	72
4	3R5	69
5	5R	66
6	7R1	63
7	10R	60
8	12R6	58
9	15R9	56
10	20R	54
11	25R2	52
12	31R7	50
13	40R	48
14	50R4	46
15	63R5	44
16	80R1	42
17	101R	40
18	127R5	38
19	161R	36
20	203R6	34
21	257R7	32
22	326R6	30
23	414R6	28
24	527R6	26
25	673R4	24
26	862R9	22
27	1K1	20
28	1K4	18
29	1K6	17
30	1K9	16
31	2K2	15
32	2K5	14
33	2K9	13
34	3K4	12
35	3K9	11
36	4K6	10
37	5K5	9
38	6K6	8
39	8K1	7
40	10K	6
41	12K8	5
42	17K1	4
43	24K2	3
44	38K6	2
45	82K	1
46	Infinity	0

<b>HiFiCollective</b>		
<b>20K &amp; 25K Shunt Network 46-Step</b>		
Input Resistor:		20K / 25K
<b>Step</b>	<b>Resistor</b>	<b>Attenuation (dB)</b>
1	0R	Infinity
2	3R6	75
3	5R	72
4	7R1	69
5	10R	66
6	14R2	63
7	20R	60
8	25R2	58
9	31R7	56
10	40R	54
11	50R4	52
12	63R4	50
13	79R9	48
14	100R7	46
15	127R	44
16	160R1	42
17	202R	40
18	255R	38
19	322R1	36
20	407R2	34
21	515R3	32
22	653R1	30
23	829R2	28
24	1K1	26
25	1K3	24
26	1K7	22
27	2K2	20
28	2K9	18
29	3K3	17
30	3K8	16
31	4K3	15
32	5K	14
33	5K8	13
34	6K7	12
35	7K8	11
36	9K2	10
37	11K	9
38	13K2	8
39	16K1	7
40	20K1	6
41	25K7	5
42	34K2	4
43	48K5	3
44	77K2	2
45	163K9	1
46	Infinity	0



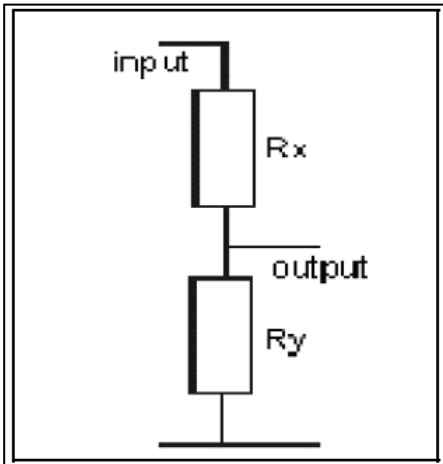
<b>HiFiCollective</b>		
<b>50K Shunt Network 46-Step</b>		
Input Resistor:		50K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	8R9	75
3	12R6	72
4	17R7	69
5	25R1	66
6	35R4	63
7	50R1	60
8	63R	58
9	79R4	56
10	100R	54
11	125R9	52
12	158R6	50
13	199R8	48
14	251R9	46
15	317R5	44
16	400R3	42
17	505R1	40
18	637R5	38
19	805R2	36
20	1K	34
21	1K3	32
22	1K6	30
23	2K1	28
24	2K6	26
25	3K4	24
26	4K3	22
27	5K6	20
28	7K2	18
29	8K2	17
30	9K4	16
31	10K8	15
32	12K5	14
33	14K4	13
34	16K8	12
35	19K6	11
36	23K1	10
37	27K5	9
38	33K1	8
39	40K4	7
40	50K2	6
41	64K2	5
42	85K5	4
43	121K2	3
44	193K1	2
45	409K8	1
46	Infinity	0

<b>HiFiCollective</b>		
<b>100K Shunt Network 46-Step</b>		
Input Resistor:		100K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	17R8	75
3	25R1	72
4	35R5	69
5	50R1	66
6	70R8	63
7	100R1	60
8	126R1	58
9	158R7	56
10	199R9	54
11	251R8	52
12	317R2	50
13	399R7	48
14	503R7	46
15	635R	44
16	800R7	42
17	1K	40
18	1K3	38
19	1K6	36
20	2K	34
21	2K6	32
22	3K3	30
23	4K1	28
24	5K3	26
25	6K7	24
26	8K6	22
27	11K1	20
28	14K4	18
29	16K4	17
30	18K8	16
31	21K6	15
32	24K9	14
33	28K8	13
34	33K5	12
35	39K2	11
36	46K2	10
37	55K	9
38	66K1	8
39	80K7	7
40	100K5	6
41	128K5	5
42	171K	4
43	242K4	3
44	386K2	2
45	819K5	1
46	Infinity	0

<b>HiFiCollective</b>		
<b>250K Shunt Network 46-Step</b>		
Input Resistor:		250K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	44R5	75
3	62R8	72
4	88R7	69
5	125R4	66
6	177R1	63
7	250R3	60
8	315R1	58
9	396R9	56
10	499R8	54
11	629R6	52
12	793R1	50
13	1K	48
14	1K3	46
15	1K6	44
16	2K	42
17	2K5	40
18	3K2	38
19	4K	36
20	5K1	34
21	6K4	32
22	8K2	30
23	10K4	28
24	13K2	26
25	16K8	24
26	21K6	22
27	27K8	20
28	36K	18
29	41K1	17
30	47K1	16
31	54K1	15
32	62K3	14
33	72K1	13
34	83K9	12
35	98K1	11
36	115K6	10
37	137K5	9
38	165K4	8
39	201K8	7
40	251K2	6
41	321K2	5
42	427K4	4
43	606K	3
44	965K5	2
45	2M	1
46	Infinity	0

<b>HiFiCollective</b>		
<b>500K Shunt Network 46-Step</b>		
Input Resistor:		500K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	88R9	75
3	125R6	72
4	177R5	69
5	250R7	66
6	354R2	63
7	500R5	60
8	630R3	58
9	793R7	56
10	1K	54
11	1K3	52
12	1K6	50
13	2K	48
14	2K5	46
15	3K2	44
16	4K	42
17	5K1	40
18	6K4	38
19	8K1	36
20	10K2	34
21	12K9	32
22	16K3	30
23	20K7	28
24	26K4	26
25	33K7	24
26	43K1	22
27	55K6	20
28	72K	18
29	82K2	17
30	94K2	16
31	108K1	15
32	124K6	14
33	144K2	13
34	167K7	12
35	196K2	11
36	231K2	10
37	275K	9
38	330K7	8
39	403K6	7
40	502K4	6
41	642K4	5
42	854K9	4
43	1M2	3
44	1M9	2
45	4M1	1
46	Infinity	0

**Hificollective`s Glasshouse resistors values for our 47 step series/shunt type of stepped attenuators, - 10K, 20K, 25K, 50K,100K, 250K, 500K**



Please note that ideal resistor values are listed. So when we select the resistors we select the nearest value. The small adjustments in resistor values are not sonically noticeable.

HiFiCollective		
10K Shunt Network 47-Step		
Input Resistor:		10K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	1R8	75
3	2R5	72
4	3R5	69
5	5R	66
6	7R1	63
7	10R	60
8	12R6	58
9	15R9	56
10	20R	54
11	25R2	52
12	31R7	50
13	40R	48
14	50R4	46
15	63R5	44
16	80R1	42
17	101R	40
18	127R5	38
19	161R	36
20	203R6	34
21	257R7	32
22	326R6	30
23	414R6	28
24	527R6	26
25	673R4	24
26	862R9	22
27	978R5	21
28	1K1	20
29	1K4	18
30	1K6	17
31	1K9	16
32	2K2	15
33	2K5	14
34	2K9	13
35	3K4	12
36	3K9	11
37	4K6	10
38	5K5	9
39	6K6	8
40	8K1	7
41	10K	6
42	12K8	5
43	17K1	4
44	24K2	3
45	38K6	2
46	82K	1
47	Infinity	0

HiFiCollective		
20K & 25K Shunt Network 47-Step		
Input Resistor:		20K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	3R6	75
3	5R	72
4	7R1	69
5	10R	66
6	14R2	63
7	20R	60
8	25R2	58
9	31R7	56
10	40R	54
11	50R4	52
12	63R4	50
13	79R9	48
14	100R7	46
15	127R	44
16	160R1	42
17	202R	40
18	255R	38
19	322R1	36
20	407R2	34
21	515R3	32
22	653R1	30
23	829R2	28
24	1K1	26
25	1K3	24
26	1K7	22
27	2K	21
28	2K2	20
29	2K9	18
30	3K3	17
31	3K8	16
32	4K3	15
33	5K	14
34	5K8	13
35	6K7	12
36	7K8	11
37	9K2	10
38	11K	9
39	13K2	8
40	16K1	7
41	20K1	6
42	25K7	5
43	34K2	4
44	48K5	3
45	77K2	2
46	163K9	1
47	Infinity	0

HiFiCollective		
50K Shunt Network 47-Step		
Input Resistor:		50K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	8R9	75
3	12R6	72
4	17R7	69
5	25R1	66
6	35R4	63
7	50R1	60
8	63R	58
9	79R4	56
10	100R	54
11	125R9	52
12	158R6	50
13	199R8	48
14	251R9	46
15	317R5	44
16	400R3	42
17	505R1	40
18	637R5	38
19	805R2	36
20	1K	34
21	1K3	32
22	1K6	30
23	2K1	28
24	2K6	26
25	3K4	24
26	4K3	22
27	4K9	21
28	5K6	20
29	7K2	18
30	8K2	17
31	9K4	16
32	10K8	15
33	12K5	14
34	14K4	13
35	16K8	12
36	19K6	11
37	23K1	10
38	27K5	9
39	33K1	8
40	40K4	7
41	50K2	6
42	64K2	5
43	85K5	4
44	121K2	3
45	193K1	2
46	409K8	1
47	Infinity	0

HiFiCollective		
100K Shunt Network 47-Step		
Input Resistor:		100K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	17R8	75
3	25R1	72
4	35R5	69
5	50R1	66
6	70R8	63
7	100R1	60
8	126R1	58
9	158R7	56
10	199R9	54
11	251R8	52
12	317R2	50
13	399R7	48
14	503R7	46
15	635R	44
16	800R7	42
17	1K	40
18	1K3	38
19	1K6	36
20	2K	34
21	2K6	32
22	3K3	30
23	4K1	28
24	5K3	26
25	6K7	24
26	8K6	22
27	9K8	21
28	11K1	20
29	14K4	18
30	16K4	17
31	18K8	16
32	21K6	15
33	24K9	14
34	28K8	13
35	33K5	12
36	39K2	11
37	46K2	10
38	55K	9
39	66K1	8
40	80K7	7
41	100K5	6
42	128K5	5
43	171K	4
44	242K4	3
45	386K2	2
46	819K5	1
47	Infinity	0

HiFiCollective		
250K Shunt Network 47-Step		
Input Resistor:		250K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	44R5	75
3	62R8	72
4	88R7	69
5	125R4	66
6	177R1	63
7	250R3	60
8	315R1	58
9	396R9	56
10	499R8	54
11	629R6	52
12	793R1	50
13	1K	48
14	1K3	46
15	1K6	44
16	2K	42
17	2K5	40
18	3K2	38
19	4K	36
20	5K1	34
21	6K4	32
22	8K2	30
23	10K4	28
24	13K2	26
25	16K8	24
26	21K6	22
27	24K5	21
28	27K8	20
29	36K	18
30	41K1	17
31	47K1	16
32	54K1	15
33	62K3	14
34	72K1	13
35	83K9	12
36	98K1	11
37	115K6	10
38	137K5	9
39	165K4	8
40	201K8	7
41	251K2	6
42	321K2	5
43	427K4	4
44	606K	3
45	965K5	2
46	2M	1
47	Infinity	0

HiFiCollective		
500K Shunt Network 47-Step		
Input Resistor:		500K
Step	Resistor	Attenuation (dB)
1	0R	Infinity
2	88R9	75
3	125R6	72
4	177R5	69
5	250R7	66
6	354R2	63
7	500R5	60
8	630R3	58
9	793R7	56
10	1K	54
11	1K3	52
12	1K6	50
13	2K	48
14	2K5	46
15	3K2	44
16	4K	42
17	5K1	40
18	6K4	38
19	8K1	36
20	10K2	34
21	12K9	32
22	16K3	30
23	20K7	28
24	26K4	26
25	33K7	24
26	43K1	22
27	48K9	21
28	55K6	20
29	72K	18
30	82K2	17
31	94K2	16
32	108K1	15
33	124K6	14
34	144K2	13
35	167K7	12
36	196K2	11
37	231K2	10
38	275K	9
39	330K7	8
40	403K6	7
41	502K4	6
42	642K4	5
43	854K9	4
44	1M2	3
45	1M9	2
46	4M1	1
47	Infinity	0