

Through Series Fixtures & QRP Labs Filters with on board O-S-L - You MUST know the Value of R0 !

Values: atten 0 [external] & R0 = 50 Ohms

R1a	0 Ohms
R1b	Empty
R2a	Empty
R2b	Empty
R3a	Empty
R3b	Empty
R4a	empty
R4b	Empty
R5a	0 Ohms
R5b	Empty
R6a	empty
R6b	Empty
R7a	49.9 Ohms 1/8 Watt 0.1% 25ppm
R7b	Empty
R8a	49.9 Ohms 1/8 Watt 0.1% 25ppm
R8b	Empty

Values: atten 8.25dB & R0 = 50 Ohms

R1a	113 Ohms 1/8 Watt 0.1% 25ppm
R1b	Empty
R2a	54.9 Ohms 1/8 Watt 0.1% 25ppm
R2b	Empty
R3a	113 Ohms 1/8 Watt 0.1% 25ppm
R3b	Empty
R4a	113 Ohms 1/8 Watt 0.1% 25ppm
R4b	Empty
R5a	54.9 Ohms 1/8 Watt 0.1% 25ppm
R5b	Empty
R6a	113 Ohms 1/8 Watt 0.1% 25ppm
R6b	Empty
R7a	49.9 Ohms 1/8 Watt 0.1% 25ppm
R7b	Empty
R8a	49.9 Ohms 1/8 Watt 0.1% 25ppm
R8b	Empty

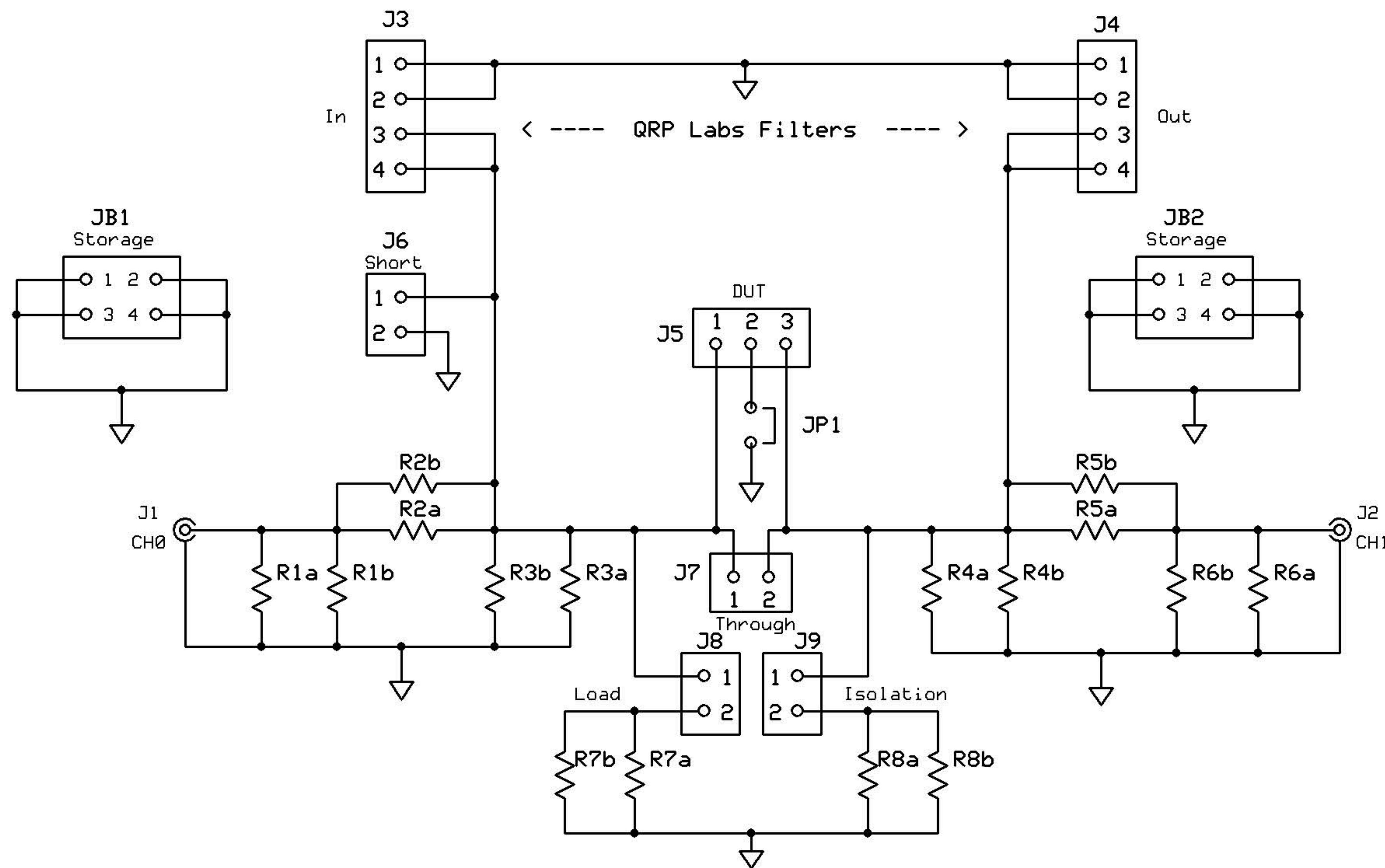
IEC-444 Xtal Fixture: Atten 13.9dB R0=12.5 Ohms

R1a	205 Ohms 1/8 Watt 0.1% 25ppm
R1b	Empty
R2a	59 Ohms 1/8 Watt 0.1% 25ppm
R2b	Empty
R3a	15 Ohms 1/8 Watt 0.1% 25ppm
R3b	300 Ohms 1/8 Watt 0.1% 25ppm
R4a	15 Ohms 1/8 Watt 0.1% 25ppm
R4b	300 Ohms 1/8 Watt 0.1% 25ppm
R5a	59 Ohms 1/8 Watt 0.1% 25ppm
R5b	Empty
R6a	205 Ohms 1/8 Watt 0.1% 25ppm
R6b	Empty
R7a	15 Ohms 1/8 Watt 0.1% 25ppm
R7b	75 Ohms 1/8 Watt 0.1% 25ppm
R8a	15 Ohms 1/8 Watt 0.1% 25ppm
R8b	75 Ohms 1/8 Watt 0.1% 25ppm

- NOTES:
- 1- R0 = R7 = R8 actual values can be any combination. [50 Ohms = 100 Parallel 100]
  - 2- Other values for any resistor may be used for specific purposes.
  - 3- Ref Des "a" are Top Surface Mount and Ref Des "b" are Bottom Surface Mount.
  - 4- PCB has been designed with 1206 parts but 0805 parts can and will be used.
  - 5- Series fixtures can have two series connected parts if JP1 is open.
  - 6- Through Shunt measurement fixtures require JP1 be installed.
  - 7- Shunt measurement fixtures also require the Through jumper to be installed.  
Off board O-S-L Calibration required if unknown R0
  - 8- Shunt fixtures can have two parallel parts to ground.
  - 9- J1 and J2 may be male SMA and will plug directly in to NanoVNA-H4.

<b>Universal NanoVNA</b>		
<b>Test Fixture</b>		
<b>K9IVB</b>	Rev 2	Page # 1 of 2
	10/03/2024	





Improved Sam Wetterlin Through Series Fixtures with out on board O-S-L

You MUST know the Value of R0 to use on board O-S-L Calibration

It would appear that Sam Wetterlin's work below was empirically derived.

Improved "Hi-Z" Series Measurement Fixture

Values: through attenuation ~ 20 dB & DUT R0 = ? Ohms

- R1a 91 Ohms 1/8 Watt 0.1% 25ppm
- R1b Empty
- R2a 49.9 Ohms 1/8 Watt 0.1% 25ppm
- R2b Empty
- R3a 127 Ohms 1/8 Watt 0.1% 25ppm
- R3b Empty
- R4a 127 Ohms 1/8 Watt 0.1% 25ppm
- R4b Empty
- R5a 49.9 Ohms 1/8 Watt 0.1% 25ppm
- R5b Empty
- R6a 91 Ohms 1/8 Watt 0.1% 25ppm
- R6b Empty
- R7a Empty
- R7b Empty
- R8a Empty
- R8b Empty

Improved Shunt Measurement "50 Ohms" Fixture

Values: through attenuation ~ 15 dB & DUT R0 = ? Ohms

- R1a 150 Ohms 1/8 Watt 0.1% 25ppm
- R1b Empty
- R2a 61.9 Ohms 1/8 Watt 0.1% 25ppm
- R2b Empty
- R3a 102 Ohms 1/8 Watt 0.1% 25ppm
- R3b 6.98KOhms 1/8 Watt 0.1% 25ppm <--- R3a & R3b effective value 100.5 Ohms
- R4a 102 Ohms 1/8 Watt 0.1% 25ppm
- R4b 6.98KOhms 1/8 Watt 0.1% 25ppm <--- R4a & R4b effective value 100.5 Ohms
- R5a 61.9 Ohms 1/8 Watt 0.1% 25ppm
- R5b Empty
- R6a 150 Ohms 1/8 Watt 0.1% 25ppm
- R6b Empty
- R7a Empty
- R7b Empty
- R8a Empty
- R8b Empty

R3 Parallel R4 effective Shunt Value = 50.25 Ohms  
See "Excerpts from some of Sam Wetterlin's Documents"

- NOTES:
- 1- R0 = R7 = R8 actual values can be any combination. [50 Ohms = 100 Parallel 100]
  - 2- Other values for any resistor may be used for specific purposes.
  - 3- Ref Des "a" are Top Surface Mount and Ref Des "b" are Bottom Surface Mount.
  - 4- PCB has been designed with 1206 parts but 0805 parts can and will be used.
  - 5- Series fixtures can have two series connected parts if JP1 is open.
  - 6- Through Shunt measurement fixtures require JP1 be installed.
  - 7- Shunt measurement fixtures also require the Through jumper to be installed.  
Off board O-S-L Calibration required if unknown R0
  - 8- Shunt fixtures can have two parallel parts to ground.
  - 9- J1 and J2 may be male SMA and will plug directly in to NanoVNA-H4.

<b>Universal NanoVNA</b>		
<b>Test Fixture</b>		
<b>K9IVB</b>	Rev 2 10/03/2024	Page # 2 of 2