Contents here is two different types of antenna matching.

Generel notes on making baluns.	
T2FD-type.	MLB (magnetic longwire balun) / MTFT (magntic transformer. (3 terminals).
4:1 balun.	1:1 balun.

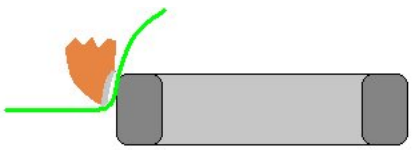
updated the 18/10-2008.

NOTES:

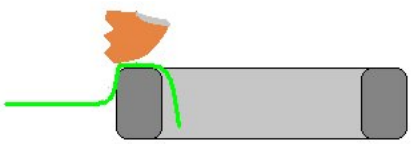
In the following constructions I've used a torrid from Phillips called "Violet" the dimetions is: 36mm * 23mm *15mm. The manufacters typenr. is TX36/23/15-4C65.
And I use cupper-wire .1cm =1mm. That is including the insulating layer of varnish.

Some generel hints on making transfors. DO NOT twist the wire. I have done that with only to of the 3 wires used to make a 1:1 balun. That was my first one and it did not work!.

And place the wires CLOSELY together. Also make sure that they are pressed along the surface of the torrid. I press the wires close into the surface by on finger on that hand holding the torrid. With the other I bend them over the edges. So after one turn it will hold itself more or less. BUT DO NOT LOOSEN THE GRIP.
Her is a animation off the making off first winding. The "torrid" has been cut in half.



1.



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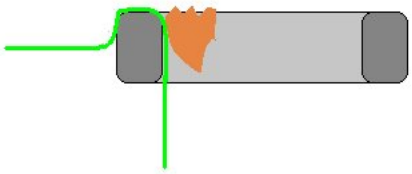
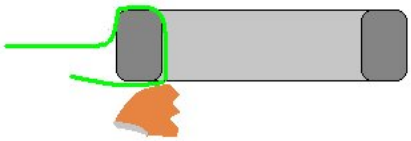
3. 

4. 

5. 

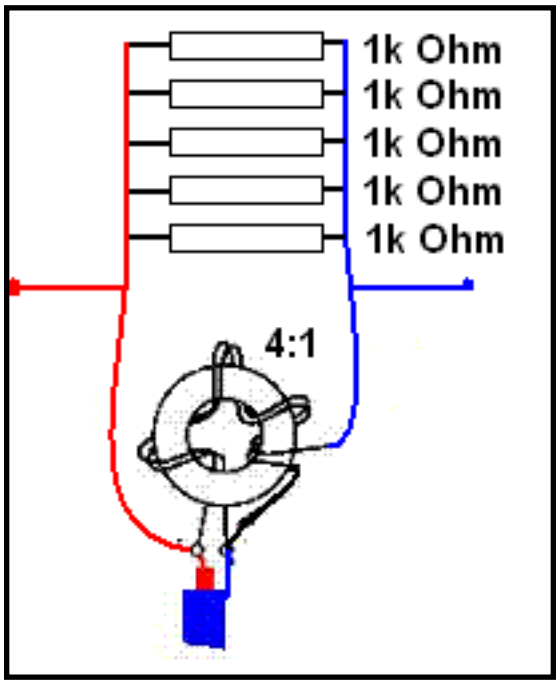
6. 

The green/red indicats a set of 2 or 3 wires in the winding. When the red color apears it is the beginning of the secong winding.

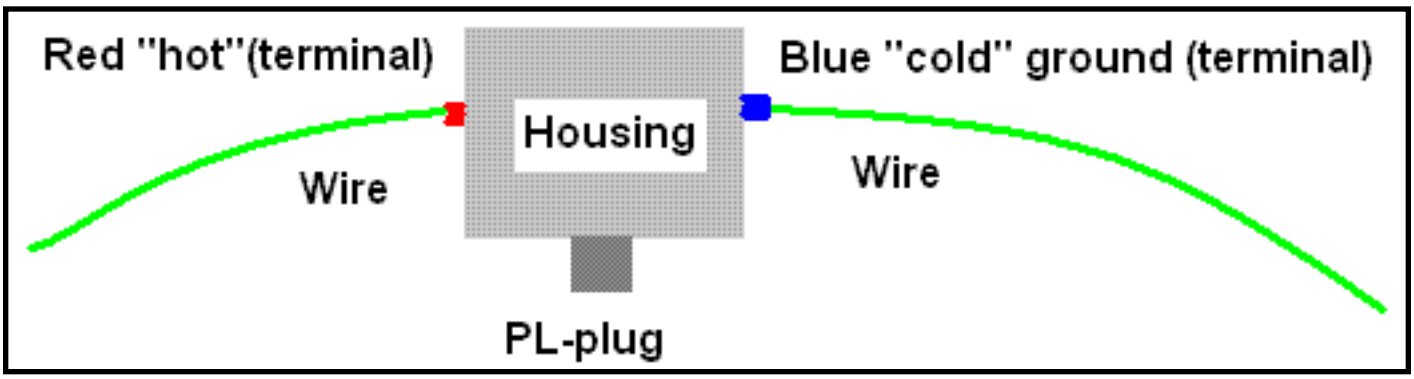
I use 10 turns everytime. And place turns closely together and parallel. A help is to make a marking on each end of the wires, therefor I have used different colours in my drawings.
And using 2 wires is called "bifilar", 3 wires is called "trifilar".

T2FD-type.

In a German amateur magazine about T2FD antennas (FUNK Amateur Page 464 and 465 in nr.4 1999. I made one with a 4:1 self made balun. Across the output terminals I placed a load off 200 Ω . Made from 5 * 1kΩ NON-inductive resistors. They were placed side by side and coupled in parallel. On the "red-terminal" I connected 6m wire.



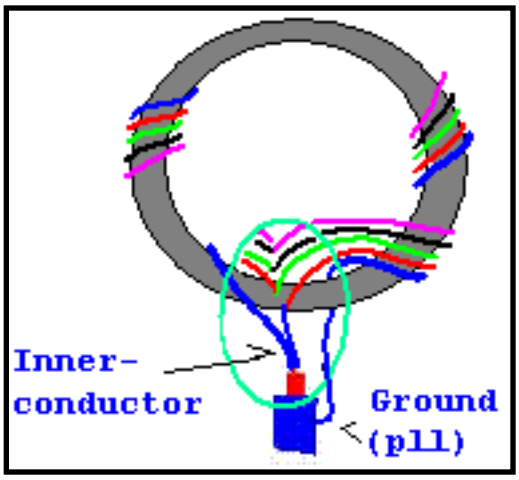
Across the 200Ω terminal I placed 5 resistors off 1KΩ and power rated 20W RTO induction free in a TO-220 housing. For cooling they were mounted on a 20mm * 60m *5mm aluminium plate.



My set-up does not use a folded dipole, that is possible because the load is placed right across the terminals on the balun. (for details goto 4:1 Balun)

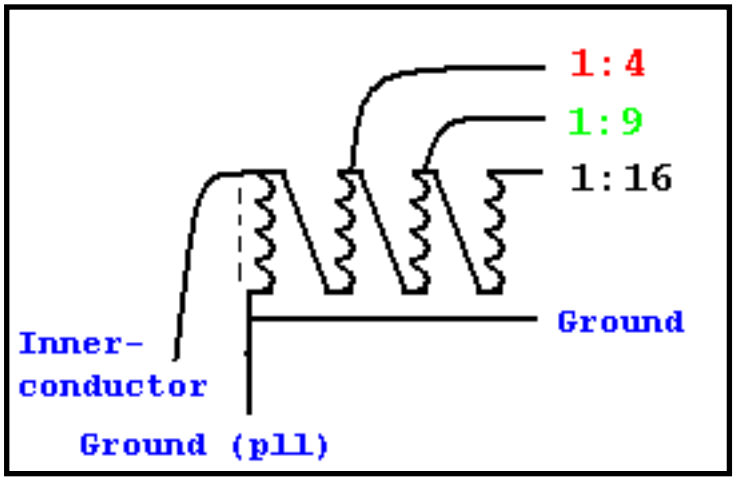
MLB (magnetic longwire balun) / MTFT (magntic transformer.

There is 3 terminals with the transformation ratios: 1:4 , 1:9 and 1:16. It's not a balun but a unun. But a Un-balanced to Un-balanced.
I've made it on the same type torroid as above.

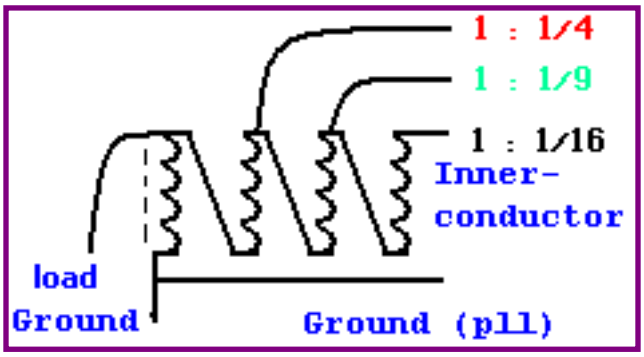


following this

diagram:



It can bee noticed, that this transformer works both ways !! So if you have a very low load. You can "swap" the input / outputs like this:

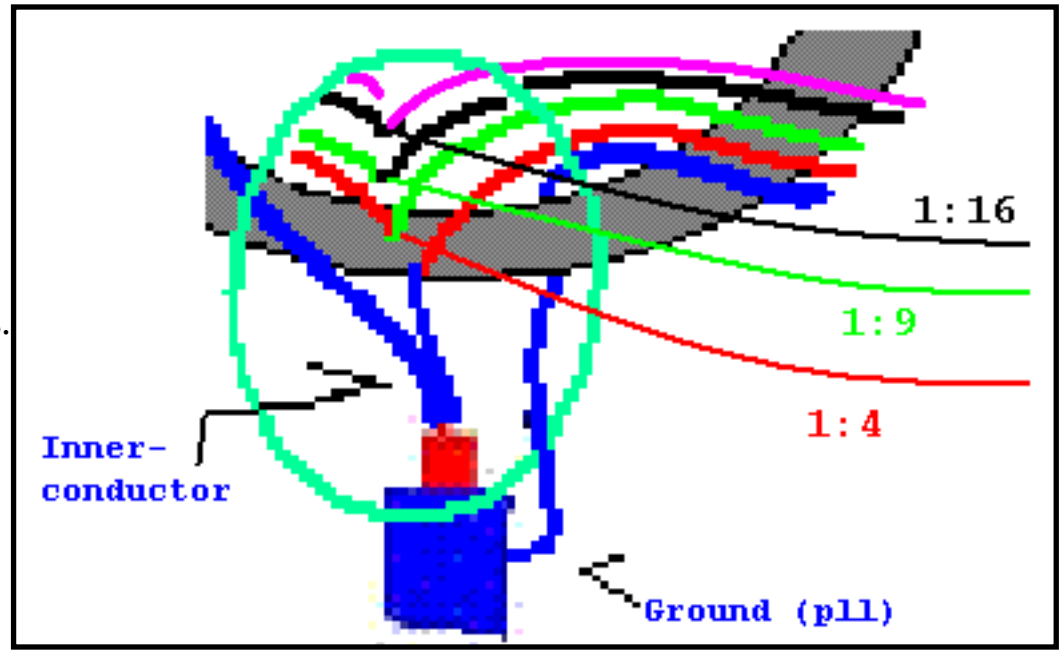


So a 50Ω coaxcable can be connected to a load of i.e. 12.5Ω and even down to 3.125Ω

I started by puting one of the ends of the cupperwire down into the center of the torrid. To be used as ground connection to the coax-cable and also out to the grounding off the antenna. The rest of the wire was the turned 10 times (1. layer of windings) around the torrid.
It ends over the ground end.
Then I bend about 3cm out. The last 1cm was stripped from insulation. Followed by a hard bending of the wire, this is the tab for the pll-plug. It shall fit into the center conductor of the PLL-plug. This has been colored "blue" on the drawing.

Here is a "closed up" of the

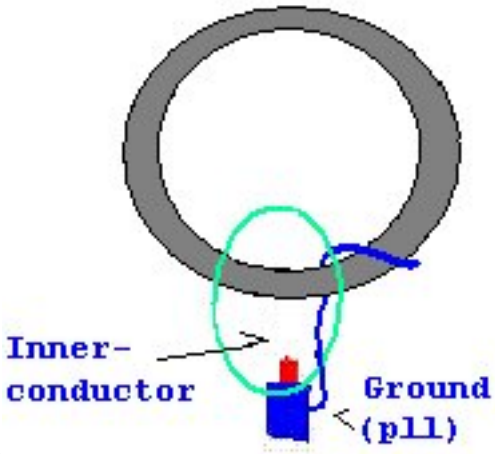
windings.



Now the second layer of windings (colored "RED") is placed CLOSELY the other windings. A when comming back to the point where the tab PLL was made. I again removed the insulation. But this time I solder a wire on this is the tab for the 1:4 terminal.

And I continued in the same way with the 3rd. layer of windings (colored "green") and finished that of with a similary tab. that is the 1:9 ratio. But as we all know pictures says more then words. Therefore a small animation has been made up :-)

1.



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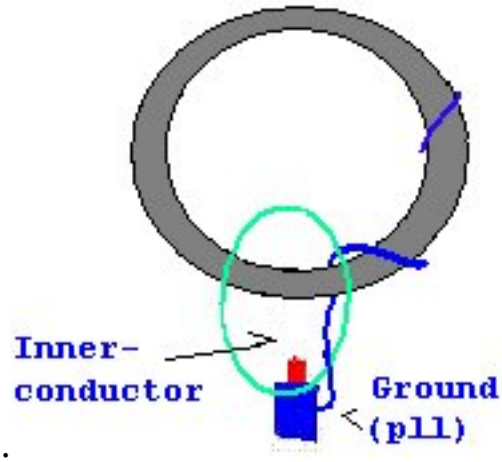

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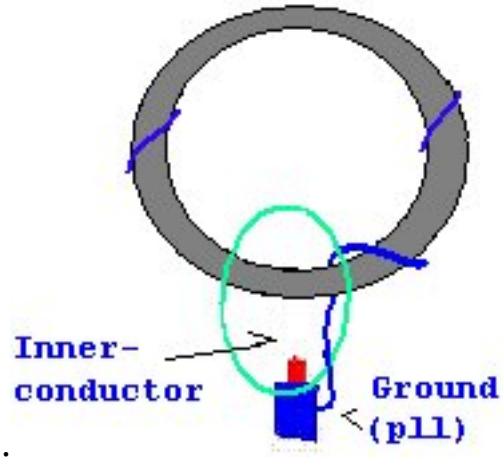

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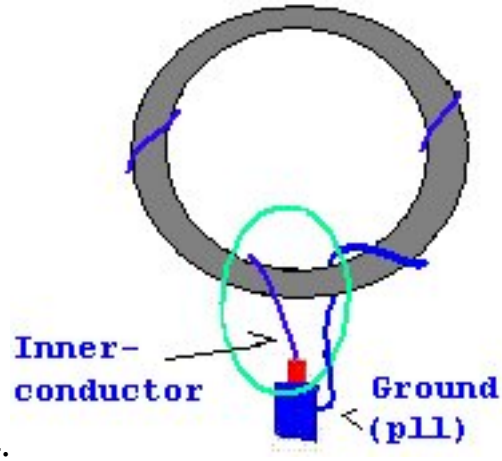

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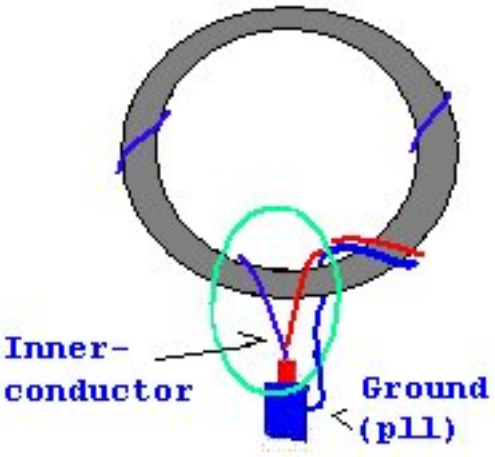

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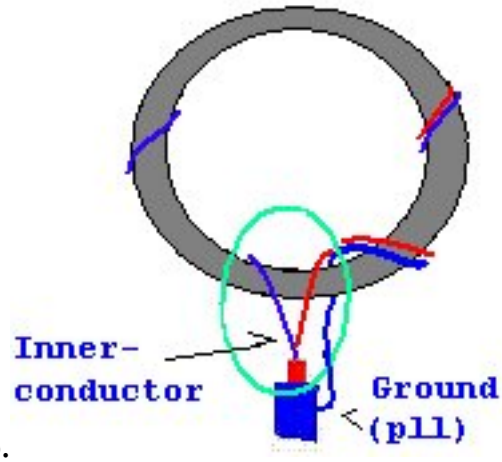

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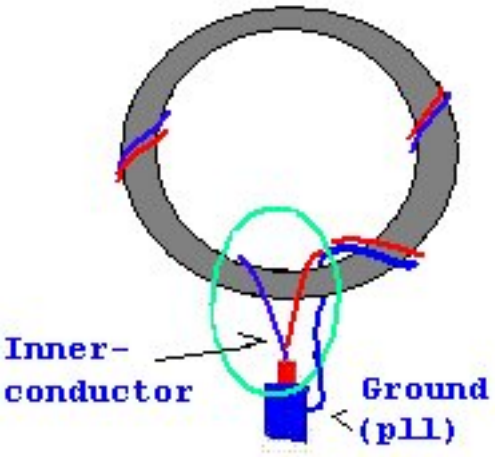

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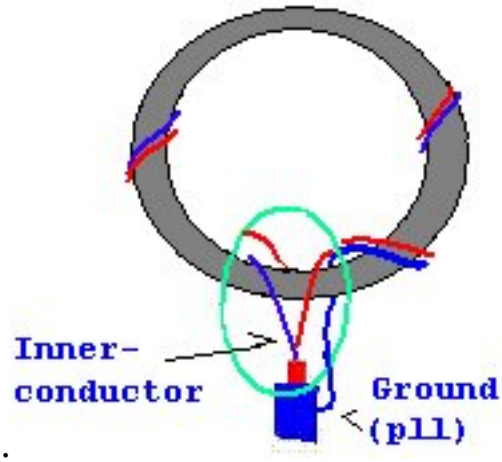

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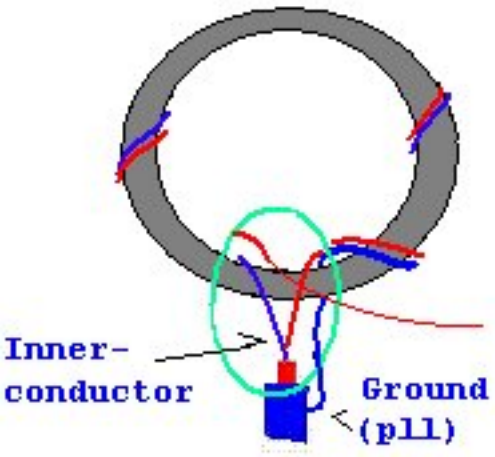

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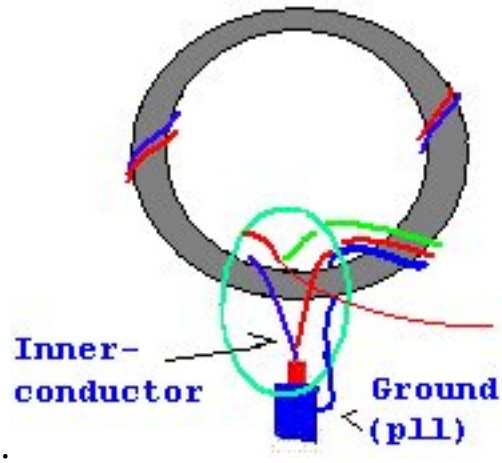

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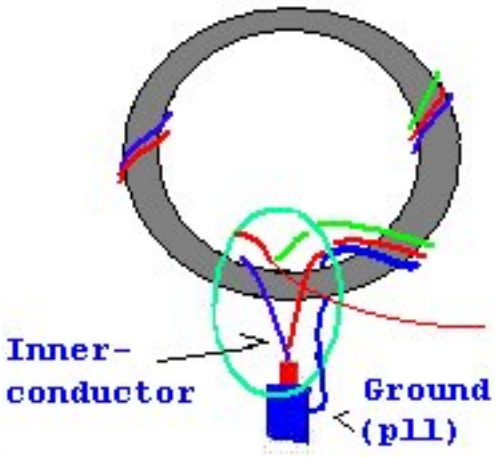

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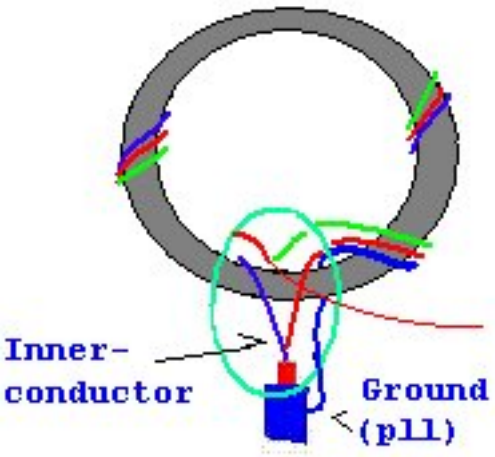

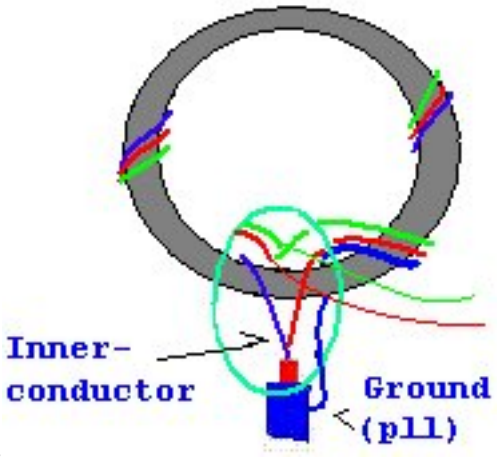

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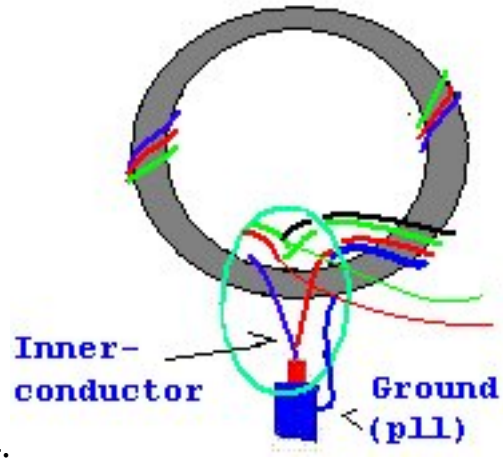

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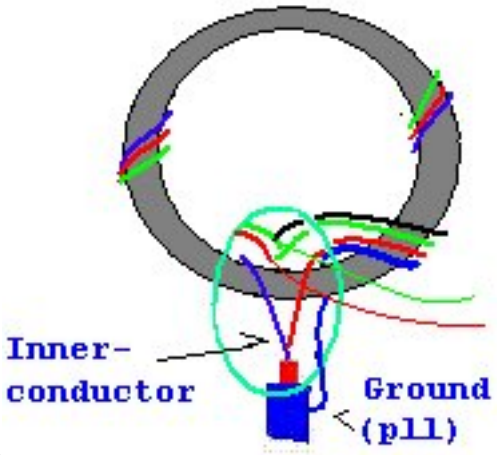


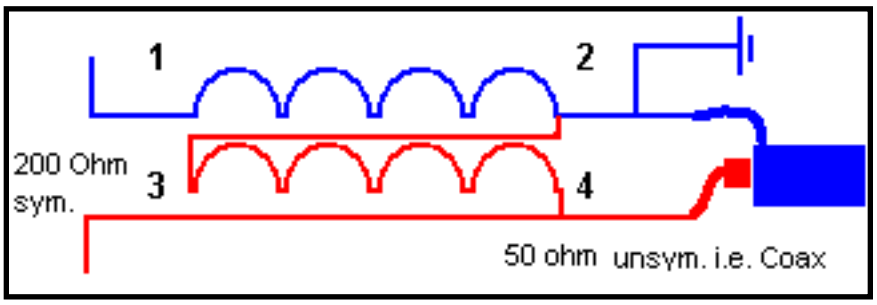
15.

Now the formula for is very simple the the number of layers =N. makes the ratio as 1:N*N . So If you make the same with the next (colored "pink") you'll get a ratio of 1:25.

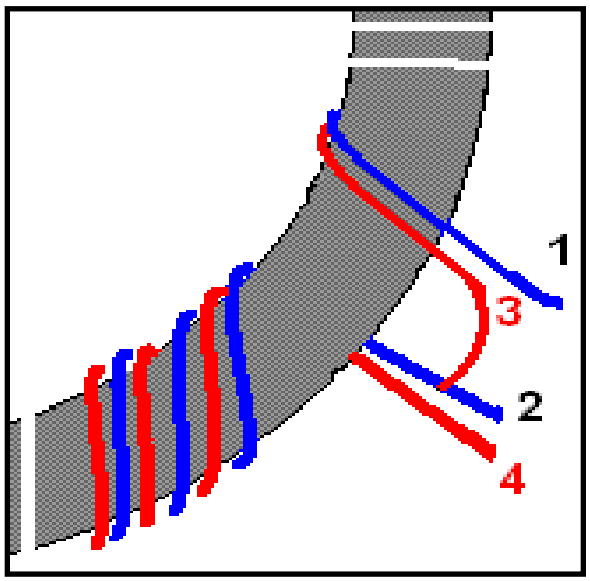
(TOP of page)

4:1-BALUN. (TOP of page) To make that transformer you need 2 cupper-wire. You shall use 2 * 1,2m.

At "2" the shield of the coax is connected. The inner conductor is connected at "4".



This is the diagram off the transformer.



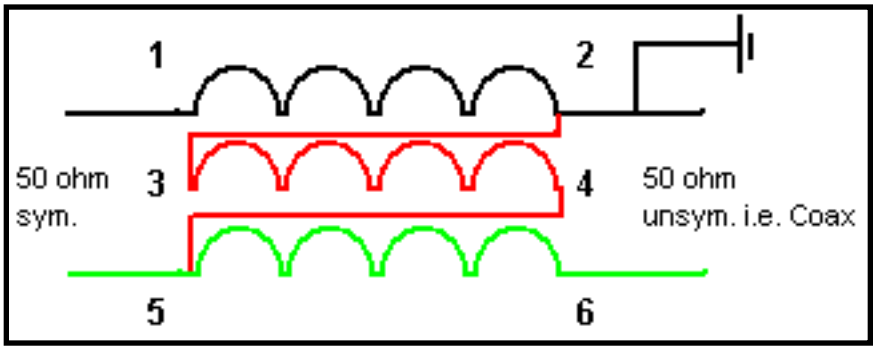
Here is shown some turns and the

interconnecting of the wires.

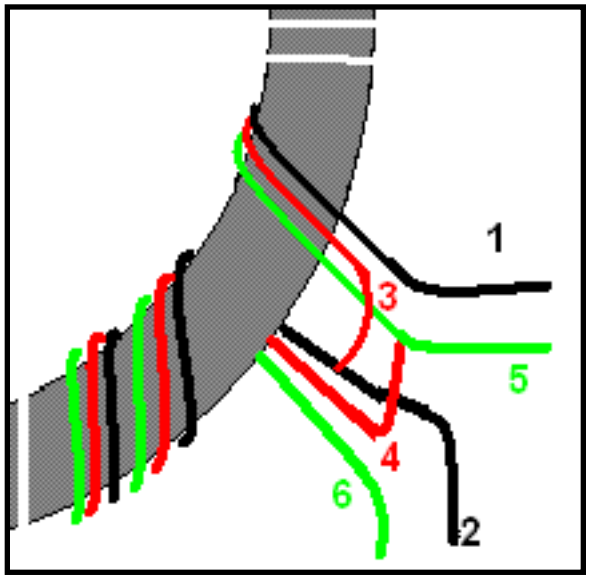
The output terminals is at "1" and "4".

1:1-BALUN. (TOP of page)

To make that transformer you need 3 cupper-wire. You shall use 3 * 1,2m.
Remember it is the middle wire that is connected to the 2 other wires.
At "2" the shield of the coax is connected. The inner conductor is connected at "6".



This is the diagram off the transformer.



Here is shown some turns and the interconnecting of the wires.

The output terminals is at "1" and "5".