EGV-1B_BPFLPF

Single band BPF/LPF module for EGV-9B main PCB

(Download EGV-9B main PCB manual from www.ea3gcy.com)

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ea3gcy@gmail.com
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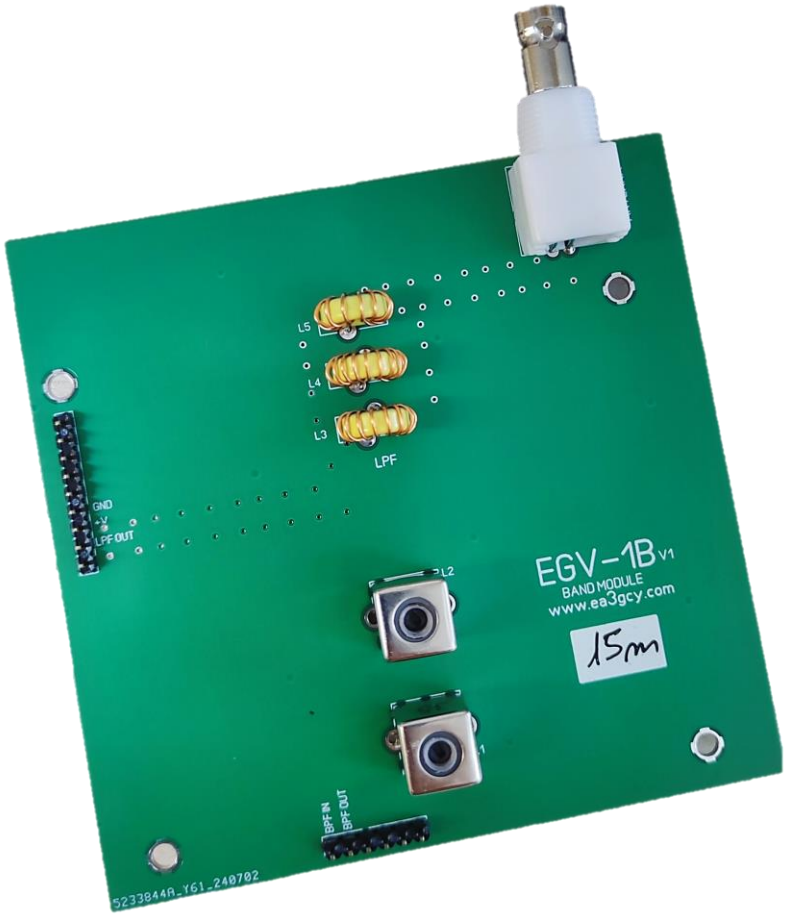


Thank you for building the ***EGV-1B_BPFLPF*** module

Have fun assembling it and enjoy QRP! 73 Javier Solans, ea3gcy

INTRODUCTION

EGV-1B_BPFLPF
The EGV-1B_BPFLPF is single band filter plug-in module for the EGV-9Bv2 CW transceiver main PCB. This module incorporates one 7-pole low-pass filters and one band-pass filter.

Note: good experience on radio assembly is required. It shouldn't be your first transceiver to build.

All SMD parts soldered at the factory. You don't have to solder anything SMD

SPECIFICATIONS

RX BAND-PASS FILTER:
Power requirements: 12 – 14VDC
Antenna impedance: 50 ohms nominal.
Frequency: according to band chosen.

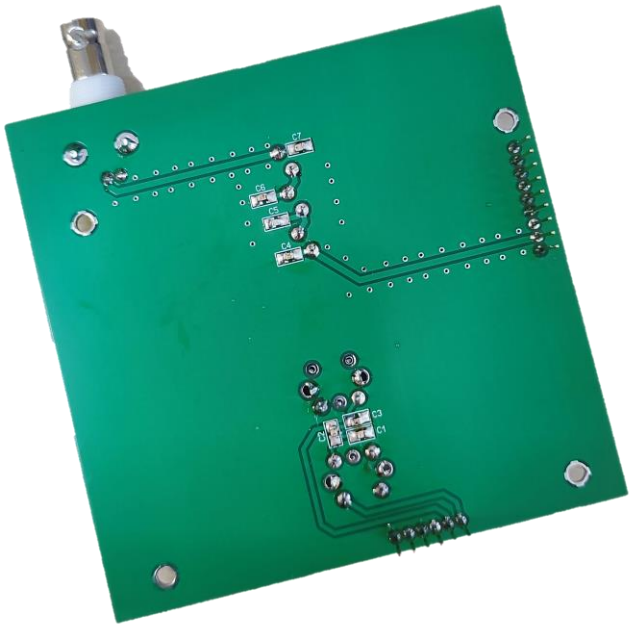
LOW PASS FILTER:
Filters: according to band chosen.
Harmonics output: -45dBc or better below the fundamental frequency.
Other spurious signals: -50dBc or better below the fundamental frequency.

Board dimensions: 100 x 97 mm.

PLEASE READ ALL ASSEMBLY INSTRUCTIONS COMPLETELY AT LEAST ONCE BEFORE YOU BEGIN.

COMPONENT LIST

Hardware				
Checked		Qty/Ref.	Type/Comment	Located
		1 BNC socket	BNC socket	Top layer
		9 pins strip	9 pins **extra long** strip	Top layer
		6 pins strip	6 pins **extra long** strip	Top layer
		3 pins strip	3 pins strip "V-TUNE"	Top layer
		4 10mm spacers	4 pcs 10mm metal spacers	Top layer
		8 M3 nuts	8 pcs. M3 nuts	Top layer
		4 M3x10	4 pcs. M3 x 10mm screws	Bottom layer
		4 M3x4	4 pcs. M3 x 4 or 5mm screws	Top layer
		Enamelled wire	Enamelled wire 0,4mm	--



RECOMMENDED ASSEMBLY SEQUENCE

All SMD parts soldered at the factory. You don't have to solder anything SMD

⇨**B**ased on your experience you can place the components in the order you are used to.
However I can recommend the following assembly sequence:

- Insert and solder L1 and L2 shielded coils (see Table).
- Insert and solder toroids (see section "L1-L2 Shielded coils and L3 to L5 Toroids winding").
- Place and solder BNC antenna socket.
- To finish, solder the pins strips. This is important work. See the section "wiring and connections"
- All capacitors are SMD format and are soldered in bottom PCB by www.ea3gcy.com lab.

L1 and L2 Shielded coils.

Band	L1-L2
80-40-30	5u3H 3334
20-17-15-10	1u2H 3335

L3 to L5 TOROIDS WINDING

⇨The following table shows the type of toroid, the turns it has to wind and the length of wire it will need. All toroids are 9.5mm/0.375in outside diameter. The T37-2 toroid is the red one and the T37-6 is the yellow one. 0.4 mm thick enameled wire is used. Use the data of your chosen band.

Band: 80m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-2 red toroid	25	36 cm
L4	T37-2 red toroid	27	39 cm

Band: 40m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-2 red toroid	18	28 cm
L4	T37-2 red toroid	20	30 cm

Band: 30m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-2 red toroid	16	24 cm
L4	T37-2 red toroid	17	25 cm

Band: 20m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-6 yell. toroid	15	23 cm
L4	T37-6 yell. toroid	16	24 cm

Band: 17m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-6 yell. toroid	13	22 cm
L4	T37-6 yell. toroid	15	24 cm

Band: 15m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-6 yell. toroid	12	20 cm
L4	T37-6 yell. toroid	14	23 cm

Band: 10m	Type	Turns	Wire length (0.4mm Ø)
L3 and L5	T37-6 yell. toroid	10	18 cm
L4	T37-6 yell. toroid	11	19 cm

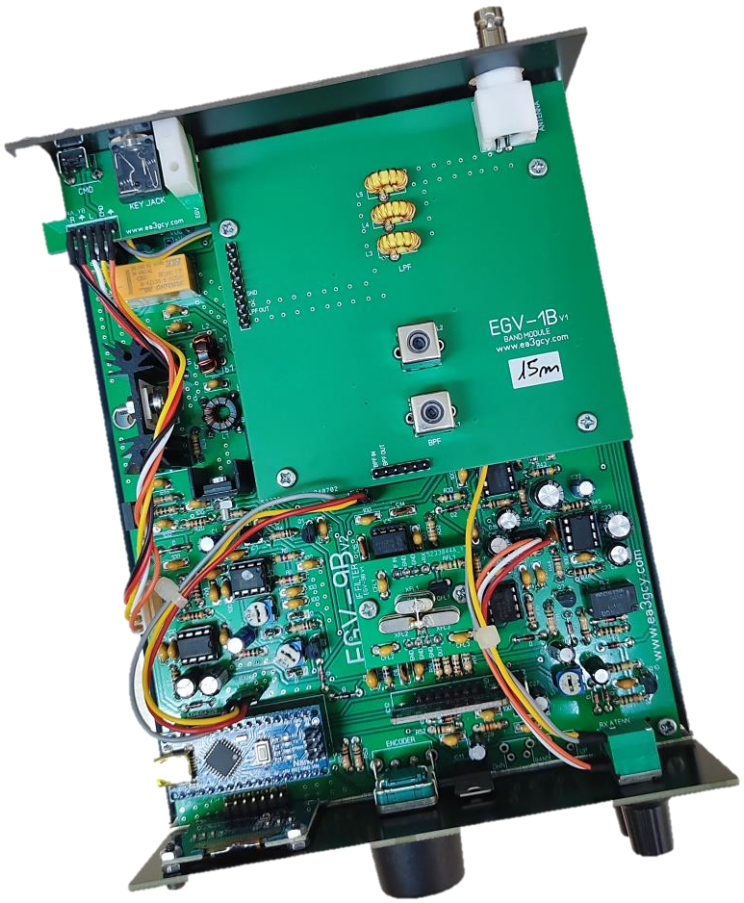
Note: Lengths are generously calculated so that you will have some wire left over and easy to pull on.

CAPACITORS LIST

⇨They are all **pre-installed** on the bottom of the PCB.

Band	C1 and C3	C2	C4 and C7	C5 and C6
80m	330pf	33pf	470pf	1200pf
40m	82pf	8.2pf	270pf	680pf
30m	47pf	4.7pf	270pf	560pf
20m	82pf	8.2pf	180pf	390pf
17m	68pf	5.6pf	100pf	270pf
15m	56pf	4.7pf	82pf	220pf
10m	27pf	2.7pf	56pf	150pf

Notes: All capacitors are SMD 100V NP0 or CG0 type.
All SMD places allow 0603, 0805, 1206 or 1210 format.



TOROIDS ASSEMBLY EXAMPLE:

⇨The following example is the low pass filter for 40m

40m LPF Toroids L3, L4 and L5

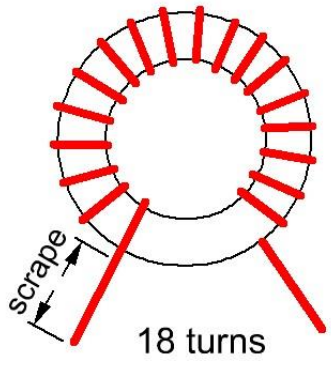
- **L3 and L5** are identical and are wound with **18 turns**.
- **L4** is wound with **20 turns**.

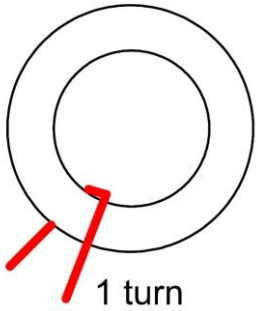
They use T37-2 (red toroids 9.5mm/0.375in outer diameter).
Cut about 28cm (10.3”) of 0.4mm diameter enameled wire and wind the **L3 and L5** toroids with eighteen (18) turns. Spread the turns evenly around the toroid and wind them tightly so that they follow the contour of the toroid and are as tight against the toroid as possible. The turns should be evenly distributed around the circumference of the toroid.
Leave pigtails of about 10-12mm (0.70”). Scrape off the enamel with a knife from the ends of the wire, in order to solder the toroid onto the board.

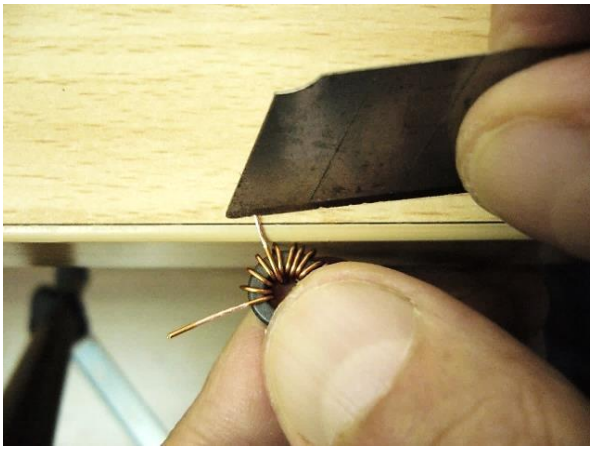
For **L4** cut about 30cm (12”) of 0.5mm diameter enameled wire and wind twenty (20) turns.
Mount and solder the three toroids in place.

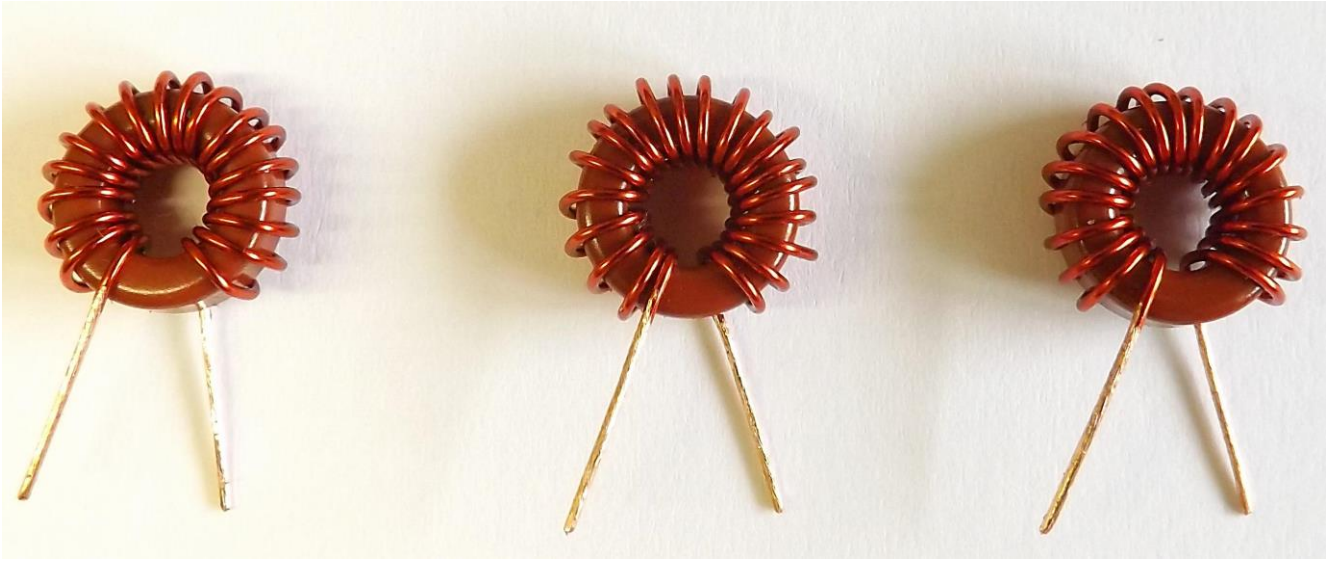
Counting the turns: Count one turn for each pass of the wire through the center of the toroid.

Important: Wind the toroid exactly as shown in the images. One turn more or less will affect the transmitter spectrum and the output power.







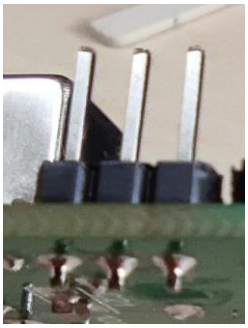


L3 (18 turns) L4 (20 turns) L5 (18 turns)

WIRING AND CONNECTIONS

⇨**T**he EGV-1B BPF/LPF PCB is a plug-in module that sits on top of the EGV-9Bv2's main board.
The connection is simple, but requires special attention so that errors do not arise.

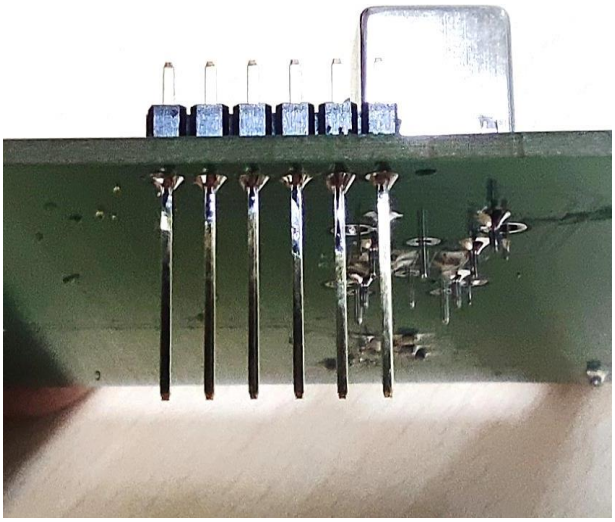
1.- The three-pin “V-TUNE” strip goes up and is soldered to the bottom side of the board.

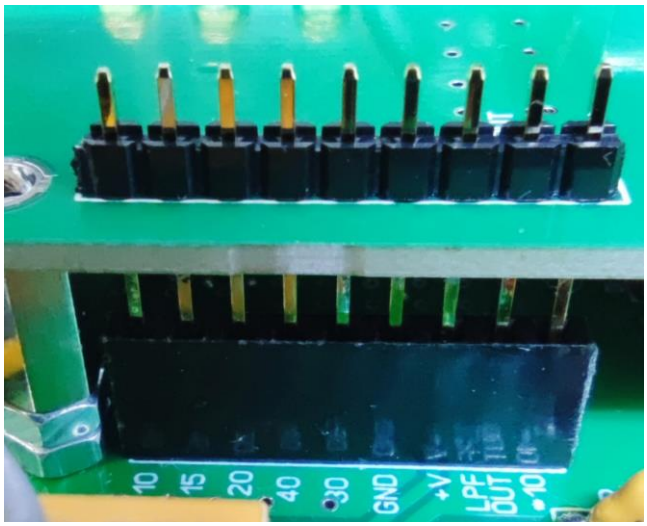


2.- The other two strips of pins go down (to connect to the main board) and are ***soldered to the top side of the board.*** Extra-long strips of pins are used. 9 and 6 extra-long pins strip.
Before soldering you should pay close attention to how tall the pins should be to accommodate the position of the plug-in board.

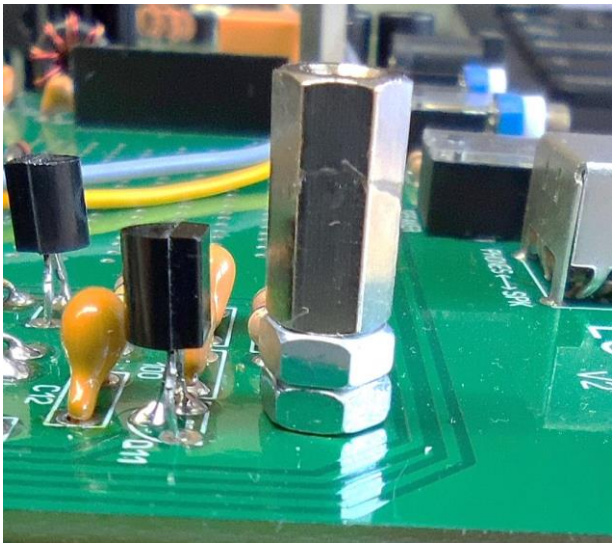
- Insert the pins from above the board (Top)
- Next put the board in place no solder the pins.
- Insert the pins into the female sockets of the main board all the way down.
- With a fine soldering iron tip, ***solder the pins on the bottom of the board.***
- Although it is not necessary, you can later tear off the plastic strip

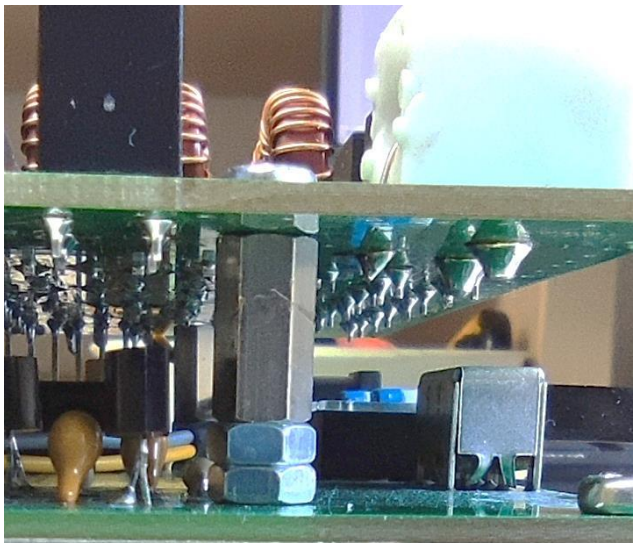
See the following pictures:





The spacers to screw the board are 10mm and you have to add two nuts to gain about 4mm in height.
To fasten to the main board, 10mm (M3x10) screws are used and to fasten the plug-in filter module, 4 or 5mm (M3x4) screws are used.
See the images.





HOW TO USE IT WITH THE EGV-9B MOTHERBOARD

⇨**F**ollowing the manual, install all the components on the EGV-9B board. No install the UP and DWN band push-buttons on the EGV-9B board (you only have one band).
Plug the EGV-1B BPF/LPF module into the EGV-9B motherboard.
Read the EGV-9B user manual carefully. Your EGV-1B will work the same except that it can only work on one band, the band you have chosen.
Tune the dial to the frequency band chosen on your EGV-1B BFP/LPF module (to move fast, you can use the 100kHz or 1MHz steps), wait >5 seconds before turning off so that that frequency is recorded in memory.
IMPORTANT: Remember **not to transmit outside the band of your EGV-1B**, it could damage the transmission stage of the EGV-9B motherboard

SETTINGS

⇨**Adjust L1 and L2 until you obtain the best reception sensitivity.**
There are no adjustments to make for the transmission. For other settings (keyer delay, side-tone level, headphone level, etc.) see the EGV-9B manuals.

LIMITED WARRANTY

Please read carefully BEFORE building your kit

All electronic components and hardware supplied with the kit are under warranty in case of any manufacturing defect for the period of one year after purchase. The warranty does not include the transmitter final amplifier transistor.

The original purchaser has the option of examining the kit and manual for 10 days. If, within this period, the buyer decides not to build the kit, he/she may return the entire unassembled kit at their own expense for the shipping expenses. The shipping expenses and sales commissions (i.e. bank, Ebay, and PayPal commissions) included in the purchase price will not be returned.
Please, BEFORE returning a product, request instructions by email at: ea3gcy@gmail.com

Javier Solans, EA3GCY, warrants this device to function according to the specifications, provided that it is assembled and adjusted as described in this documentation, and used correctly according to all provided instructions.

It is your responsibility to follow all the instructions in the manual, to identify all the components correctly, and to use good workmanship and proper tools and instruments in the construction and adjustment of this kit.

REMEMBER: This kit will not work as a commercially manufactured product; however, it can often give similar results. Do not expect

great performance, BUT YOU ARE SURE TO HAVE LOTS OF FUN!

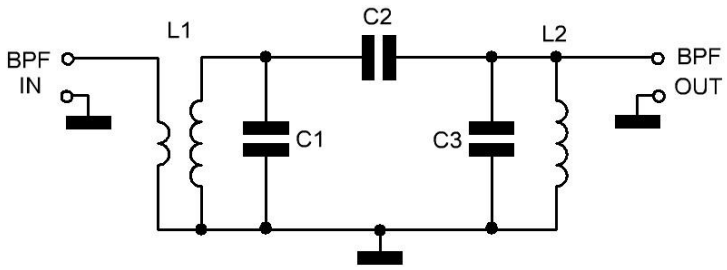
If you believe that there is a missing kit component, please do a thorough inventory of all parts using the parts list in the manual. Check all bags, envelopes and boxes carefully. If needed, you may email me and I will replace any component that you are missing. Even if you can find the exact part locally, please let me know so that we are aware of the problem to help other customers.

I can also supply any part that you have lost, damaged or broken accidently.
If you find any errors in this manual or would like to make a comment, please do not hesitate to contact me at ea3gcy@gmail.com

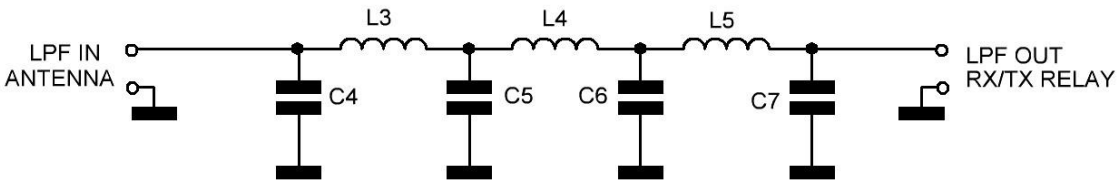
THANK YOU for building the
EGV-1B_BPFLPF module kit.
Enjoy QRP!
73 Javier Solans, EA3GCY

SCHEMATICS

RX Band Pass Filter



Low Pass Filter



EGV-1B BPF and LPF