

Heathkit SB-201 AMP very good condition

MODES: CW & SSB

TUBES: 2 of 572B

POWER OUTPUT on CW***SSB PEP output will be: Slightly higher***: 650 to 700 Watts.

supplied with Original paper Heathkit Manual and construction Diagrams.

Had 2 owners. Brought from ComCentre.

Refurbished to as new condition with NEW Harbach 4 components fitted,

1. soft start \$US30,

<http://harbachelectronics.com/shop/heathkit-sb-200-sb-201/ss-201-240-soft-start-module/>

<http://harbachelectronics.com/wp-content/uploads/2015/04/SS-201-v3.0.pdf>

2. power supply board diodes resistors & capacitors \$US115,

<http://harbachelectronics.com/shop/heathkit-sb-200-sb-201/pw-200-120-replacement-power-supply-module-ss-201-120-soft-start-combo/>

3. circuit breakers US\$12,

<http://harbachelectronics.com/shop/heathkit-sb220-sb221/brk-220-replacement-10a-circuit-breaker/>

4. softkey \$US27 :Softkey for low voltage transmit on

<http://harbachelectronics.com/shop/heathkit-sb-200-sb-201/sk-201-soft-key-keying-interface/>

<http://harbachelectronics.com/wp-content/uploads/2015/01/SK-201-v3.0.pdf>

plus postage \$US30 . Total \$US213 = \$NZ287.

A list of details of all the new Harbach components fitted (including fitting instructions) for \$NZ287 can be found here:

<http://www.jking.net.au.net/SB-201/sb-201%20sellv002.htm>

FEATURES: include: MULTI-FUNCTION METER FOR: GRID & PLATE current, Plate Volt meter, SWR and Relative Power Output,

Amp in very good 9.5 out of 10 condition and outside is unmarked, clean & tidy almost as new general appearance. Suitable for a collector who wants almost as new condition.

Have owned about 11 years.

Operates at 100% performance.

To meet Trademe rules; Sold only to licensed amateur, who must provide proof of current license before paying or receiving.

Selling because have other amps and do not use much.

Performance information:

<http://www.eham.net/reviews/detail/1162>

Is a kitset: You can build + fix the SB201 yourself; all parts are available and not expensive:

Full manual, parts list + assembly instructions:

http://tubularelectronics.com/Heath_Manual_Collection/Heath_Manuals_S/SB-201/sb201.pdf

Parts

<http://harbachelectronics.com/product-category/heathkit-sb-200-sb-201/>

Information

<http://www.xs4all.nl/~pa0fri/Lineairs/SB200/sb200eng.htm>

<http://www.westlawn.net/sk/sb200.html>

[very inexpensive] new 572B tubes for only US\$64 ea,

http://aero-smith.net/cart/index.php?main_page=product_info&cPath=31&products_id=509

<http://www.ebay.com> + search sb-200

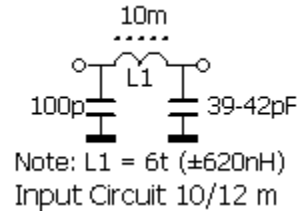
Any questions please ask ZL4AI

The SB201 does not have a 10 m input circuit fitted: The original SB-200 did have the 10 m circuit fitted, but US Government Laws required in the 1970s that the circuit be removed. The band switch already has a switch position for 10m. The 10/12m input can be easily fitted by

following the wiring diagrams in the Manual for an SB-200, and making up / adding an input circuit as follows:

To make Input Circuit.

Self-inductance of L1 is approx. 620 nH: Six turns of 1mm wire wound on a 9 mm drill bit. This is fitted over a 7.5mm dia ferrite core inside a 9 mm OD plastic tube, so the ferrite can be moved to adjust to 620nH. C1 is 100 pF. C2 is an adjustable ceramic capacitor. Careful tuning now achieves an SWR < 1.2 on both bands, and 1.0 on either band.



Parts are approximately \$NZ\$4.20 as follows.

Ferrite core available at Element14.com or Jaycar.co.nz CAT.NO: LF1010, NZ\$3.10 or 0.6uH power inductors from Element14.com for approx \$US1.50

C1: Jaycar: 100pF 50 Volt Ceramic Capacitor - Pk.2: CAT.NO: RC5324, \$NZ0.40

C3: below

Jaycar: 33pF 50 Volt Ceramic Capacitor - Pk.2: CAT.NO: RC5324, \$NZ0.40, plus

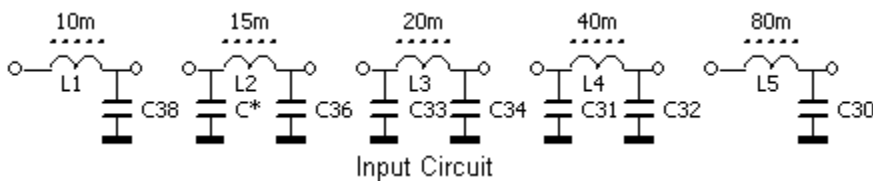
Jaycar: 1.5 or 1.8 or 2.2, or 2.7 or 3.3 or 4.7 or 5.6 or 6.8 or 8.2 pF 2pF 50 Volt Ceramic Capacitor - Pk.2:, \$NZ0.40, plus

Information on Input Circuits

Source:

<http://www.xs4all.nl/~pa0fri/Lineairs/SB200/sb200eng.htm>

INPUT CIRCUIT



After changing the grounding of the grids as described, the input circuits were tuned by adjustment of the coil

cores and capacitors for best SWR in the centre of each band. Do not forget though that all depends on how the wiring is dressed. You may find different values for your amplifier, especially at the higher frequency bands. Using 100pF ceramic trimmers makes things easier. They can handle the 100 W drive without problems.

10 m	??????	C38 = 33 pF	SWR = 1.4
12 m	??????	10 m input circuit	SWR = 1.3
17 m	??????	15 m input circuit	SWR = 1.3
15 m	C* = 56 pF	C36 = 39 pF	SWR = 1.4
20 m	C33 = 360 pF	C34 = 200 pF	SWR = 1.0
40 m	C31 = 510 pF	C32 = 310 + 39 pF	SWR = 1.0
80 m	??????	C30 = 470 + 47 pF	SWR = 1.0

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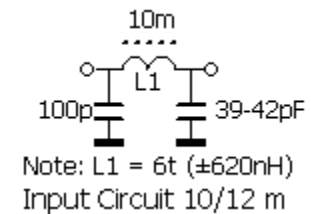
A good compromise is to be found for the 10, 12, 15 and 17 m bands. If you adjust for a 15 m SWR of 1.2, it will be 1.7 on 17 m and vice-versa. An average of 1.4 for both bands is a good compromise. If you want to operate above 28.5 MHz, the SWR

will exceed 1.5. A separate circuit would be required to improve on that. If you can achieve an SWR of 1.0 on 10 or 12m, the output increases by 30 ?????? 50W. Where an input circuit is only an L-network, the length of the coax from the driver and stray capacity may affect the SWR.

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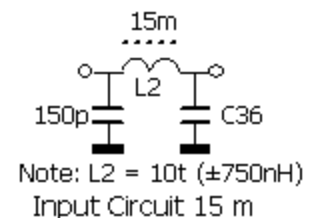
INPUT CIRCUIT 10 m

Having tried various circuits for 10 and 12 m, all of which did work, I still was not happy. With a properly dimensioned pi network, a 1.0 SWR should be possible. The self-inductance of L1 actually was too small and has been increased to approx. 620 nH. Replace the three turns with six turns of 1mm wire. If wound on a 9 mm drill bit, a tight fit on the coil former results. Secure with a drop of superglue. Note that C1 has been replaced by one of 100 pF. Carefull tuning now achieves an SWR < 1.2 on both bands, and 1.0 on either band.



INPUT CIRCUIT 15 m

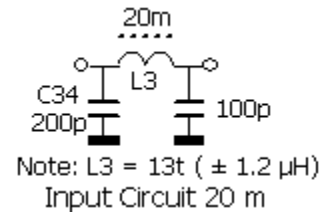
On 10 and 15 m moving the cores in the coils does not have much effect. That is because the stray capacity of the lay-out and wiring is excessive. By replacing the L-network by a pi-network, 2 +?? 150 pF on 15 m with a coil in between, the stray capacity becomes part of that circuit and the SWR is not so much affected by the coax length. C36 then must be 150 pF less the stray capacity. L2 should be about 750 nH, ten turns of 1 mm wire replacing the original five turns. If you also want to revamp the 20 m circuit, you can use the original 20 m coil on 15 m and rewind the



original 15 m former for 20 m. By adjusting the core of L2 and C36, an SWR < 1.3 can be achieved on both 15 and 17 m. I found a good compromise with the original C36 = 76 pF. It is quite a job but I believe it to be well worthwhile if one input circuit has to serve on two bands. The easiest way is to tune for a 1.0 SWR in the centre of the 15 m band and then, on 17 m, to adjust C36 for an SWR < 1.5.

INPUT CIRCUIT 20 m

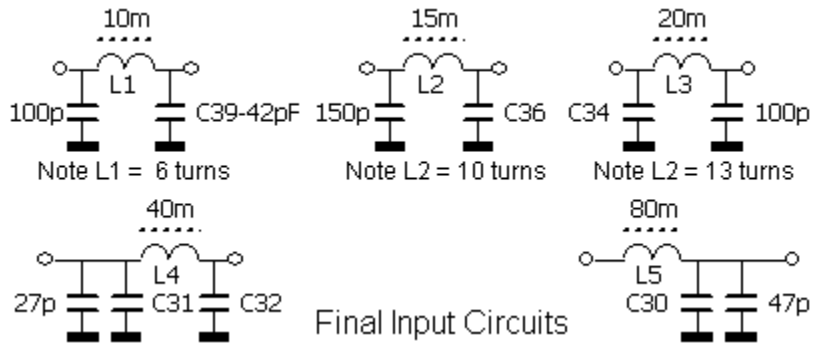
In my SB200, after transmitting on 20 m for a few minutes, the input coil got so hot that at one occasion the plastic trimming tool stuck to its core. I suspected that this resulted from too high a Q. That Q was then reduced by replacing C34 by a 100 pF capacitor and using the removed 200 pF to replace the 360pF unit at C33. L3 then must be increased to approx. 1.2 μ H, 13 turns. The heating of the 20 m coil now is less, but still worse than on the other bands. I do not know why this should be so.



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To give a good overview, here are the input circuits for all bands as I left them:-??-??

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OTHER INFORMATION ON SB20x RESTORATION

<http://www.crompton.com/hamradio/heath/sb200/sb200.html>

<http://blog.kotarak.net/2008/03/sb-200-part-1.html>

Tuned Inputs

http://lists.contesting.com/_amps/2003-03/msg00850.html

[Amps] SB200 tuned input

from [George & Marijke Guerin]

[\[Permanent Link\]](#)[\[Original\]](#)

To: <amps@contesting.com>

Subject: [Amps] SB200 tuned input

From: gmguerin at voyager.net (George & Marijke Guerin)

Date: Wed Mar 26 14:52:28 2003

Dear Bruce, et. al.,

I looked up my SB-200 notes and found the following. The input circuits are L-networks on 80, 15 & 10, The input circuits are Pi-networks on 20 & 40.

For all the input circuits I found:

on 80, my SB200 input was good at 4000 KHz, not below. I moved the slug in a bit and maybe added 40 pfd in parallel with the stock capacitor to get a good average from 3.5 to 3.8 MHz.

on 40, mine was OK. I am sure I tweaked the slug to best SWR around 7100 Khz.

on 20 mine was OK as built. I had a friend with a bad input SWR and found one of the two capacitors was defective. Replacing it brought it in the middle of the band with low SWR throughout.

on 15 meters, I found the value of the inductor to be low and the capacitor to be high. I changed the capacitor to either 47 or 51 pfd (maybe it was 68 pfd originally?). On one unit I changed the 15 meter coil for a 20 meter coil and found good resonance. On a second unit I wound three turns of coil on a pencil as a form and put it in series with the end of the coil going to the band switch without the capacitor to ground. Then I had enough inductance to minimize the SWR in the middle of 15 meters.

on 10 meters, I also found the value of the inductor to be low and the capacitor to be high, again this is an L-network. I changed the capacitor to either 42 or 44 pfd and increased the inductance, once by using a 15 meter input coil, and the other time by using 3 turns airwound of #16 or #18 hook up wire in series with the stock coil. For both 10 & 15, the coil diameter ID is 5/16" by 1/4" long. That is 8 mm ID x 6+ mm long in metric units.

To loosen the slug in the coil, I had to warm an Allen Key with a soldering iron or torch just a little bit to warm the slug so the wax would melt.

I noted some early 15 meter inputs had a Pi-network, maybe pre-1972 when I bought an SB-200 kit. I have no experience with them, except the values should be proportionally lower than on 20 meters, like +/- 66%.

I no longer have any Heathkit amps, only a couple of cooling fans with

plastic blades.

73, Good luck, George K8GG

----- Original Message -----

From: "Ballew, Bruce N" <bnballew@tva.gov>

To: <amps@contesting.com>

Sent: Wednesday, March 26, 2003 9:16 AM

Subject: [Amps] SB200 tuned input

> As a new amp owner, but with and old amp (SB200). I have other question.

(By

> the way thanks to the all that answered my 1st question. We have it

rebuild

> and are up to testing and hopefully operation.) On the tuned inputs on the

> SB200 I have ran the analyzer on the input and find that the only

coil/tuned

> filter that appears to be tuned any were near the band is 40 meters. I

have

> check the SWR on this also and the any band, again that has a low SWR is

40

> meters. All the other coils/tuned filters are outside the band area. Is

> this normal for the SB200. If so has anyone tested the inputs to see what

> freq. that they are tuned to. And / or is there a way to tune them. I

would

> like to make sure that they are tuned where they need to be and insure

> proper operation of the amp..

> Thanks for any help.

> Bruce

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> _____

> Amps mailing list

> Amps@contesting.com

> <http://lists.contesting.com/mailman/listinfo/amps>

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Inputs: Re-Install 10 meters

Doug/K5CR

This info can me used to mod the SB201 and SB221 to 10 meters.

It describes the 10 Meter section of the SB200 and SB221.

Here are the details for Ten meters on the SB200.

Input network is an L-network like 15 meters. However, the capacitor is 68 pF. The coil (part # 40-728) is approx. 2 1/3 turns # 18 wire, coil length is 5/32" and coil Dia. is 3/8". Use the 15 meter coil for visual details.

Plate circuit. The 10 meter tap on the 15/10 meter coil is 4 turns from plate tuning capacitor end of coil, and 4 3/4 turns from the bandswitch 15 meter end of coil. Also the junction of the 80/40/20 meter coil.

The 10 meter tap is on the bottom of the 10/15 meter coil.

I hope this information is clear. Having the unit to look at helps.

Here is the info on Ten meters on the SB220.

Input network is like 15 meters. The capacitors are 115 pF on the RF input side, and 2 each 22pF on the filament side of the coil. The coil is 0.58 uH. Part # is 40-964. This is the same part number as the 15 meter coil.

Plate circuit. The 10 meter coil tap is 3 3/4 turns from the plate tuning capacitor end of coil. The tap is on the side of coil. Same side as the bandswitch wafer. The connection between the coil and the bandswitch is made using a silver plated strap (1/4" wide).

Hope this helps those interested in adding 10 meters to these Heath Kit amps. I don't know if the bandswitches in these two amps have the terminal for 10 meters or not.

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Other Amplifiers for Sale: Contact ZL4AI

Heathkit SB221: 1,500 watts output from 2 of 3-500Z Eimac tubes: Completely restored to fully functional with all Harbach new components \$NZ\$1,350

Kenwood TL9221,500 watts output from 2 of 3-500Z Eimac tubes: In absolutely mint condition with original US documents and original boxes: \$NZ\$2,100