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Model BN-4000B  
 High Power Balun for  
 Beams with Type SO-239

# INSTRUCTION MANUAL

## General Description

The BN-4000 is a current-type balun whose primary function is to provide the proper current paths between unbalanced coaxial cable and a balanced antenna feedpoint. The BN4000 uses ferrite beads over a short length of coax cable to choke-off the flow of RF on the outside of the coax shield.

## Construction

The BN-4000 uses type 77 ferrite beads on a length of RG-303 Teflon dielectric cable. The 200 C rating of both the beads and the cable along with a very high thermally conductive potting compound contribute to the conservatively rated continuous duty cycle power rating of 2000 watts.

## SPECIFICATIONS

### *Electrical*

Impedance ..... 50 ohms  
 Frequency Range ..... 1 to 54 MHz  
 Insertion Loss ..... negligible (less than .1 dB)  
 SSB/CW Power Handling Capabilities ..... 4000 W PEP, 2000 W Ave.  
 RTTY Power Handling Capabilities ..... 2000 W continuous duty cycle

### *Mechanical*

Net Weight ..... 1.3 lb (0.59 kg)  
 Dimensions ..... 3 1/4" x 6 1/4" (8.3 cm x 15.9 cm)  
 Input Receptacle ..... Teflon SO-239  
 Output Receptacle ..... standard terminal lugs  
 Weather Protection ..... weatherproof housing with thermally conductive potting  
 Hardware ..... all stainless steel

## Mounting on Boom or Mast

Refer to Figures 1 and 2.

Place U-bolt around mast or boom - diameter 1 3/8" to 2 3/8".

Place balun against mast or boom and insert the U-bolt through the holes on the sides of the balun.

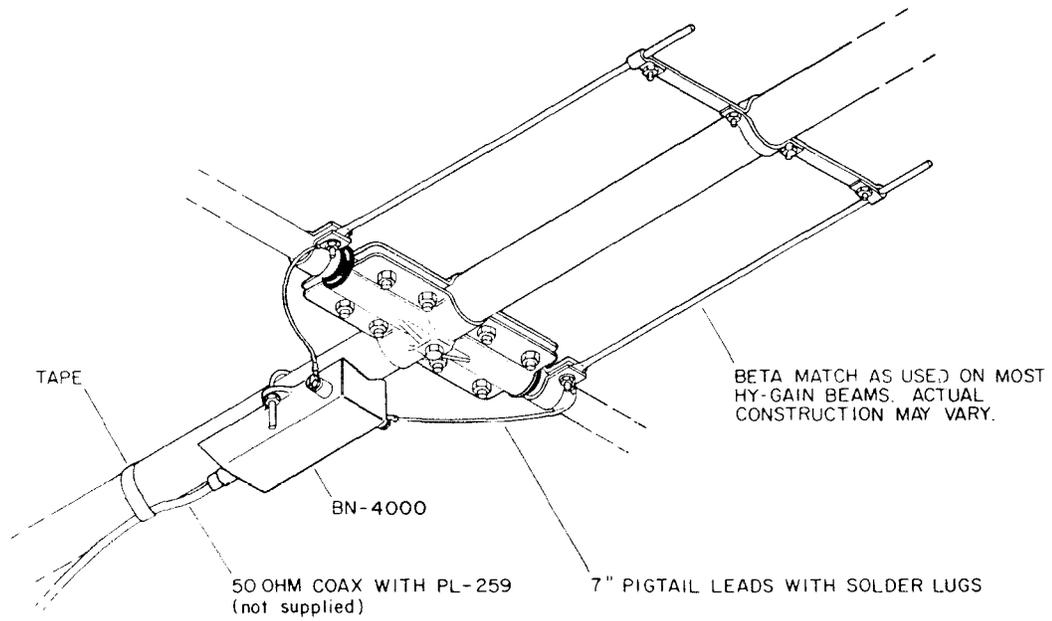


Figure 1  
Typical Balun Installation

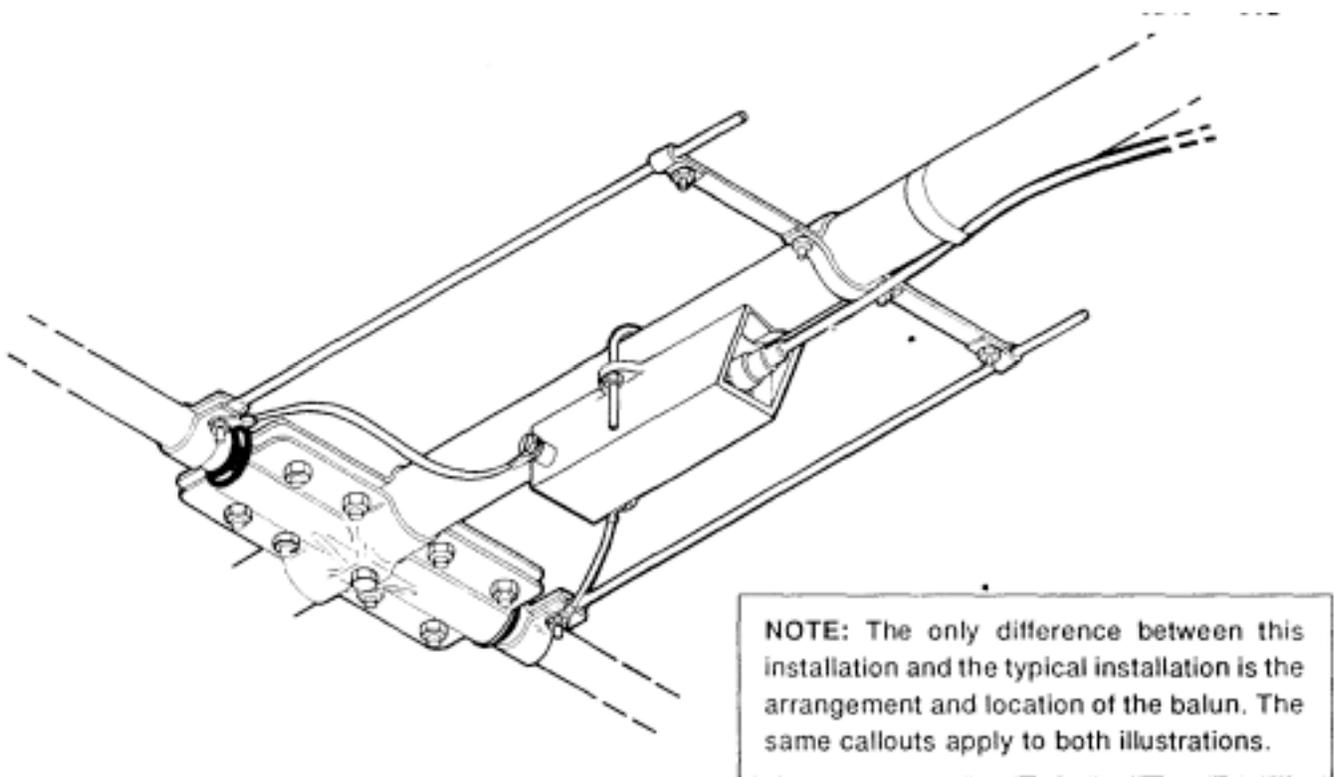


Figure 2  
Alternate Balun Installation

Tighten all hardware securely. Connect the leads to the driven element. (See Note)

Connect the coax to the receptacle on the balun.

*NOTE:* Fasten the balun as close as possible to the driven element. Leads from the two terminal outputs to the driven element should not exceed either 7" or existing lengths of the coax leads. Longer lengths will lower the resonant frequency of the antenna system. Make sure these two wires do *not touch* the driven element bracket.

If you are replacing an existing balun, you may notice a slight shift of the resonant frequency. This may be offset by using longer or shorter pigtail wires.

*NOTE:* Always connect the balun directly to the driven element. In some antennas the beta match is connected to the driven element with two insulated wires. These wires from the beta match and the wires from the balun should both be connected to the driven element. When using this balun with the Hy-Gain TH7DX or TH5/MK2 antennas, disregard this note.

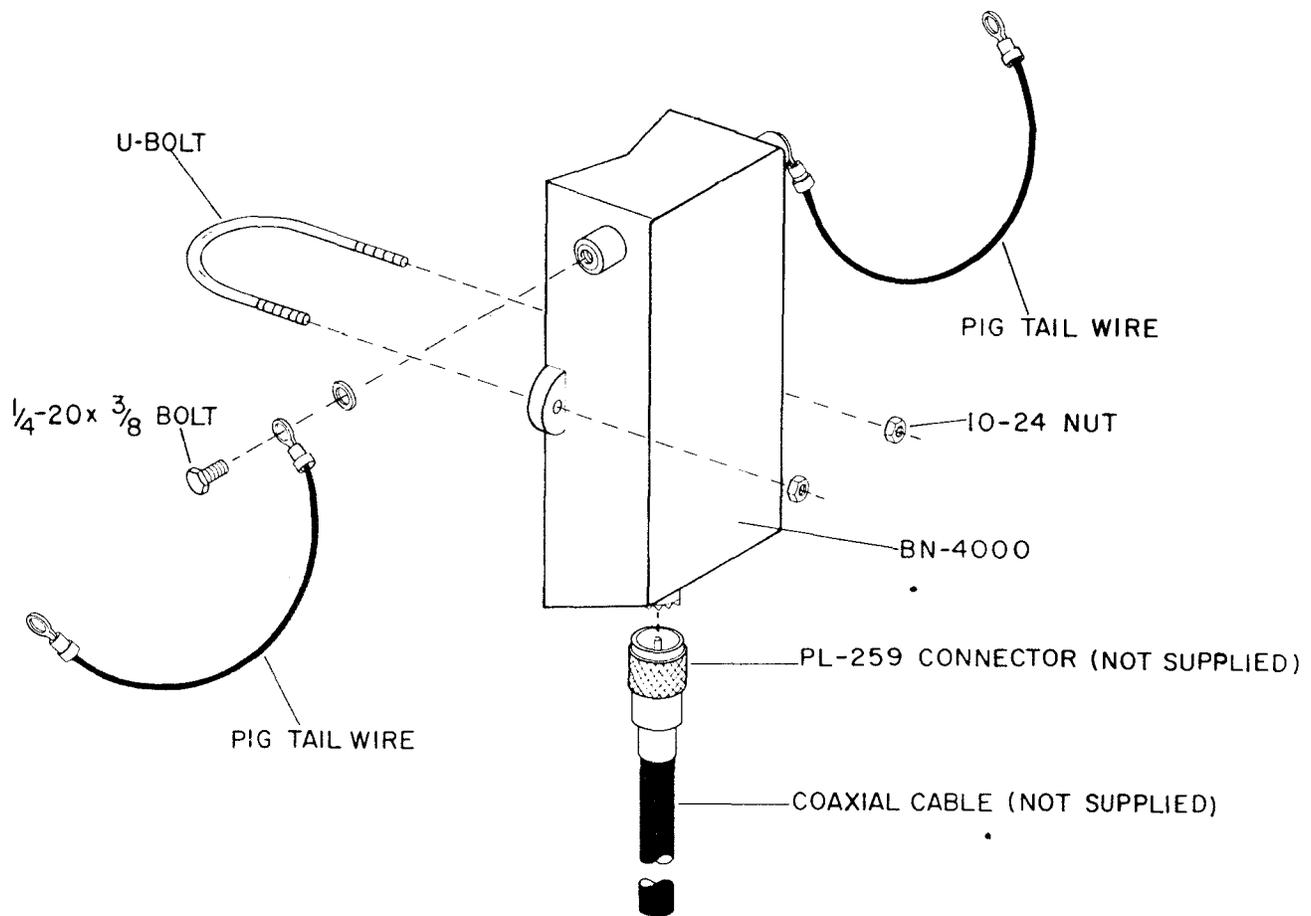


Figure 3  
Overall View

*NOTE:* An Ohmmeter check of the balun at all points will show a DC open. This is normal.

**CAUTION:**

Although the BN-4000 is conservatively rated at 2000 watts average power, do not exceed the maximum power rating for your transmission line. For example, RG-8 and RG-213/u coax is rated at 2000 watts at 30 MHz and 3700 watts at 10 MHz

**Weatherproofing**

The coaxial connection may be weatherproofed with hand-moldable plastic Coax-Seal©. This substance should be applied liberally to the connection and pushed into tight areas for complete sealing.

**CAUTION:**

This substance permanently seals the coaxial connection and is very difficult to remove from the connector.

**Customer Service**

All requests, inquires, warranty claims, or for ordering replacement parts,

Hy-Gain  
308 Industrial Park Road Starkville,  
Mississippi 39759 USA Phone:  
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**PARTS LIST**

Part No.	Description	
879915	Balun Assembly.....	1
879914	Parts Pack, 243S.....	1
540087	U-bolt, #10-24 x 2 1/2" x 2 3/4" .....	1
871508	Pigtail wire, 7".....	2
554071	Nut, hex, #10-24.....	4
562961	Lockwasher, internal, 1/4" .....	4
500156	Bolt, hex head, 1/4"-20 x 3/8" .....	2
850050	Coax-SealO.....	1

## **hy-gain**® LIMITED WARRANTY

**Hy-Gain** Warrants to the original owner of this product, if manufactured by **Hy-Gain** and purchased from an authorized dealer or directly from **Hy-Gain** to be free from defects in material and workmanship for a period of 12 months for rotator products and 24 months for antenna products from date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof of-purchase to **Hy-Gain** at the time of warranty service. **Hy-Gain** shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
2. **Hy-Gain** agrees to repair or replace at **Hy-Gain's** option without charge to the original owner any defective product under warranty, provided the product is returned postage prepaid to **Hy-Gain** with a personal check, cashiers check, or money order for \$8.00 covering postage and handling.
3. Under no circumstances is **Hy-Gain** liable for consequential damages to person or property by the use of any **Hy-Gain** products.
4. Out-of-warranty Service: **Hy-Gain** will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
5. This warranty is given in lieu of any other warranty expressed or implied.
6. **Hy-Gain** reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
7. All **Hy-Gain** products to be serviced in-warranty or out-of-warranty should be addressed to **hy-gain, 308 Industrial Park Road, Mississippi 39759, USA** and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.
8. This warranty gives you specific rights, and you may also have other rights which vary from state to state.