

THE BEAM BOXTM

Models FM10 and FM8
Owner's Manual

Congratulations!

With the purchase of THE BEAM BOX by B-I-C you have taken an important step towards realizing the full fidelity and quality of sound which your FM receiver or tuner can deliver. THE BEAM BOX is a truly unique product designed to replace ineffective indoor FM antennas such as twin-lead dipole wires often supplied with FM sets. Cumbersome "rabbit-ears" antennas, ineffective and dangerous wall-outlet antennas and, in many cases, outdoor antennas that are either ineffective for FM reception or cannot be readily oriented for best FM reception.

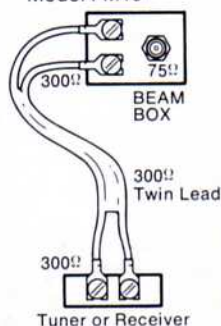
THE BEAM BOX is a high fidelity component. Once properly installed, it can be *electronically* oriented to pick up signals from stations located anywhere in your listening area. Since it is highly directional, it picks up desired signals while rejecting undesired signal reflections that cause multipath distortion, increase in background noise . . . and even loss of good stereo channel separation. In addition to its electronic orientation capability, THE BEAM BOX incorporates a completely electronic tuning circuit which covers the entire FM frequency band, from 88 MHz to 108 MHz. By enabling you to tune precisely to the signals of your choice, THE BEAM BOX helps to reject unwanted interfering signals of other FM frequencies which might adversely affect the sound quality of the stations you actually want to hear. THE BEAM BOX is much more than a precision indoor FM antenna. It is the only product available that actually improves many of the performance characteristics of your tuner or receiver, regardless of its cost. Since THE BEAM BOX is a precision electronic product, we urge you to read the entire contents of this manual before attempting to connect or use it. You will find that installation and operation are quite simple. Here's to better FM fidelity!

Installation

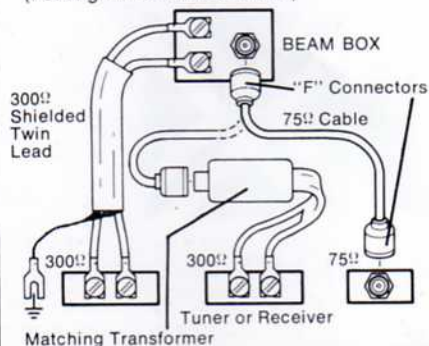
THE BEAM BOX will work virtually at any location in your high fidelity system. For optimum performance, follow these guide lines:

- THE BEAM BOX should not be placed next to a *large* metal object, such as a radiator, metal cabinet, etc.
- THE BEAM BOX should not be placed on top of a receiver or tuner that contains vent holes on top. This will not affect the antenna, but could restrict the venting of the receiver or tuner.
- Since you will want to observe the tuning meter on your receiver or tuner when using THE BEAM BOX; for convenience sake, it should be as close to the receiver or tuner as possible.

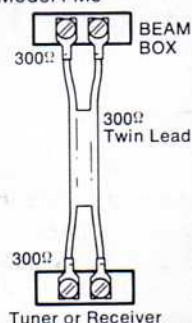
NORMAL INSTALLATION Model FM10



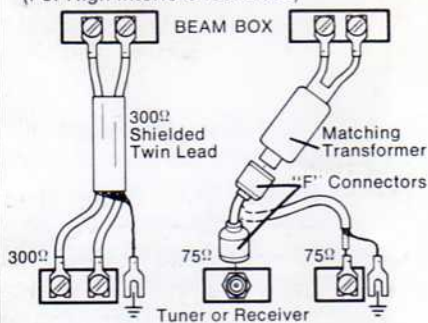
ALTERNATE INSTALLATION (FM10) (For High Interference Areas)



NORMAL INSTALLATION Model FM8



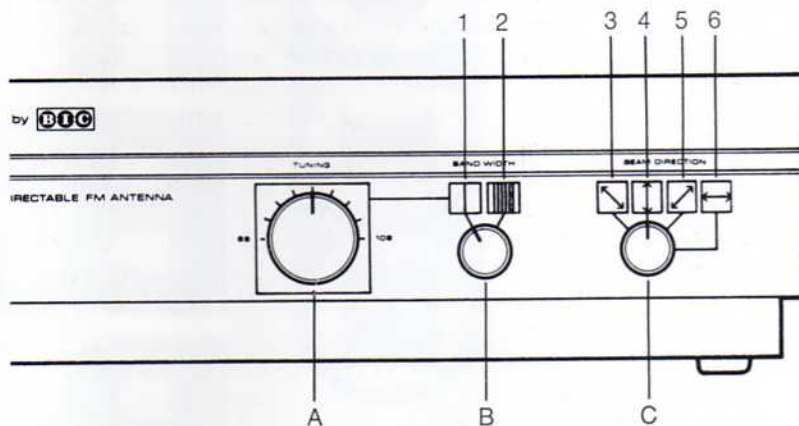
ALTERNATE INSTALLATION (FM8) (For High Interference Areas)



NOTE: Only the 300 Ohm Twin Lead is Supplied

OPERATING INSTRUCTIONS

Control Functions (FM10 Illustrated)

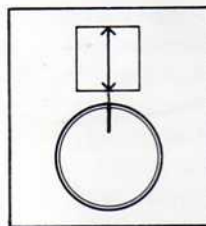


A. TUNING CONTROL. This control is used to fine-tune THE BEAM BOX so that it is most sensitive to those frequencies that you want to receive. The control covers the entire FM frequency range from 88 Megahertz to 108 Megahertz.

B. BANDWIDTH CONTROL. This two-position switch selects either broad (2) or sharp (finite) tuning (1), as indicated by the two diagrams located directly above the control knob.

C. DIRECTIONAL CONTROL. This control is used to electronically orient the antenna elements contained in THE BEAM BOX. The arrows appearing in the blocks (boxes 3 thru 6), just above the control knob, indicate the directions from which signals will be most

favorably received as you face the front panel of THE BEAM BOX. Thus, when the control is switched so that its pointer lines up as in the diagram, best signal reception will occur for signals arriving from directly in front of you or from directly behind you. The four available electronically orientatable positions of this control cover a complete 360 degree

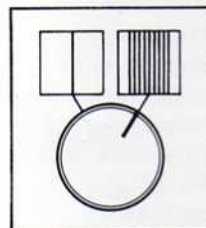


circle, insuring best reception of all FM signals, regardless of where the station transmitters in your area are located.

Initial Control Settings

After you have installed THE BEAM BOX and wired it to the antenna terminals of your FM tuner or receiver, start by setting THE BEAM BOX controls as follows:

- Set the TUNING CONTROL (A), to approximately its mid-point of rotation, half way between the 88 MHz and 108 MHz calibration notations.
- Set the BANDWIDTH CONTROL (B), to the broad position (2), as indicated by the diagram.



3. Set the DIRECTIONAL CONTROL arbitrarily, for any of the four available electronic orientation directions (boxes 3 thru 6).

Turn on your receiver or tuner, adjusting controls of your system for normal listening levels. Tune your receiver or tuner to the frequency of a station you wish to receive. If your tuner or receiver is equipped with a center-of-channel tuning meter or any other center-tuning indicator, make sure that you have tuned the receiver or tuner to the exact center of channel, as indicated by

Wiring

We supply a length of 300 Ohm twin lead with spade connectors at each end. Attach one end of the twin lead to the two screw terminals labelled 300 Ohms at the rear of THE BEAM BOX. Attach the other end of the twin lead to the 300 Ohm connection at the rear of your receiver or tuner. (See Diagram of Normal Installation).

If the connections at the rear of your receiver or tuner are press-in type (not screws), cut off the spade lugs, strip back the wire and insert the wire in the press-in connector.

Alternate Installation

If you are in a very high interference area, where, for example, automotive ignition noise may be a problem, it may be necessary to use shielded cable (either 75 Ohm or 300 Ohm).

The FM10 contains an "F" connector for 75 Ohm transmission line. (See Diagram of Alternate Installation—FM10.)

The Diagram (Alternate Installation—FM8) shows the various connections for use of these type cables on the Model FM8. When 75 Ohm cable is used a matching transformer will be necessary.

Contact your local electronics dealer for "F" connectors, 75 Ohm and 300 Ohm cable necessary for these hook-ups.

signal strength of nearby station signals which might otherwise overload the early-stage circuitry of the tuner or receiver and cause distortion in the recovered audio signals. While most manufacturers recommend that this switch be normally set to the DISTANT position, the increased reception sensitivity provided by the connection of THE BEAM BOX may occasionally require that this switch be moved to the LOCAL position. If you are not certain about this, a bit of experimentation with this switch (if provided on your set) will help you to ascertain which setting should be used with which of your favorite stations.

In some instances, moving the LOCAL-DISTANT switch to the LOCAL position will enable you to use your signal-strength meter, as a more positive indicator of correct electronic orientation of THE BEAM BOX.

Selectable I-F Bandwidth

Some late-model FM tuners and receivers are equipped with selectable I-F bandwidth switches. The purpose of these switches is to enable you to receive signals with the best compromise between high selectivity (ability to zero in on stations that are spaced close together on the FM frequency dial) and lowest possible distortion. In areas where stations are spaced far apart on the dial, the switch is normally set to the WIDE or NORMAL position, while in areas where there are a great many closely spaced signals on the dial, the switch is set to the NARROW or SHARP position on the tuner or receiver. If your set is equipped with this extra circuit feature, you may find that the increased sensitivity provided by THE BEAM BOX will necessitate your choosing the NARROW or SHARP I-F bandwidth setting for those signals that were previously satisfactorily received using the WIDE or NORMAL position. If, when using THE BEAM BOX, you find that some received signals are interfered with by other, adjacent signals on the dial, switch the I-F Bandwidth switch to the NARROW or SHARP position.

Picking Up Distant Station Signals Whose Direction Is Known

If you wish to pick up a signal broadcast by a distant station whose direction is known, you can by-pass some of the BEAM BOX tuning steps described earlier. Simply set the DIRECTIONAL CONTROL on THE BEAM BOX so that the antenna elements are oriented towards the distant transmitter (arrows pointing towards the station transmitter), set THE BEAM BOX BANDWIDTH switch to the

SHARP (finite) position (1) and tune the TUNING CONTROL carefully to the frequency which results in highest signal strength indication on your set's signal strength tuning meter or audibly clearest and most noise-free program sounds.

Helpful Hints

The components used in THE BEAM BOX do not deteriorate with age.

The connections at the rear of THE BEAM BOX and receiver are vulnerable to stress (wire being pulled or moved). If reception is poor, inspect these connections and correct if necessary.

If service is required, contact the dealer from whom you purchased THE BEAM BOX. If this cannot be done, write or phone B·I·C|AVNET, Westbury, N.Y. 11590, (516) 334-7450. Due to the design of THE BEAM BOX, we doubt this will be necessary.

Maintenance

THE BEAM BOX cabinet is made of a high quality vinyl (simulated walnut) material. This should be cleaned and protected with a plastic cleaner and/or protectant, such as "Armor All."

Limited Warranty

THE BEAM BOX is warranted for a period of two years (parts and labor). See the warranty card for full details.

NOTE:

The items listed below are available through local electronics dealers. If you have difficulty obtaining these items they can be ordered through B·I·C|AVNET, Westbury, N.Y. 11590 by remitting the amounts shown plus \$.50 shipping and handling. State and local taxes must be added where applicable.

"F" connector w/crimp ring	\$.45 ea.
75 Ohm cable, "F" connector on one end, spade lug on other (44" length)	3.00
75 Ohm cable, "F" connectors on both ends (44" length)	3.45
300 Ohm shielded twin lead with spade connectors on both ends (44" length)	2.75
75 Ohm to 300 Ohm matching transformer (terminates in 300 Ohm spade lead)	2.50



B·I·C|AVNET Westbury, N.Y. 11590

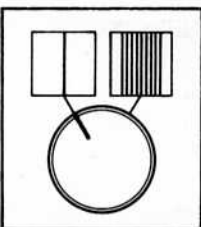
THE BEAM BOX and B·I·C are trademarks of B·I·C|AVNET, Westbury, New York 11590

such tuning devices. If your equipment has a signal-strength meter or other indicator, note the reading on that meter.

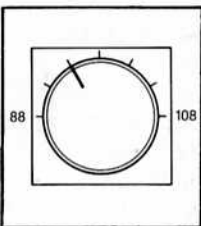
Next, rotate the DIRECTIONAL CONTROL knob to each of the four available orientation positions, observing the signal strength meter indications. Select that orientation which affords the highest signal strength indications on your meter. If your tuner or receiver is not equipped with any signal-strength indicating device, listen carefully to the received program and choose that orientation setting which results in the clearest and most noise-free reception.

In the case of strong signal reception (if you are very close to the station's transmitter location), your signal strength meter may read "full scale" for more than one orientation setting of the DIRECTION CONTROL. In that case, listen carefully to the quality of the received program material and choose that orientation setting which results in the least distorted sound which is accompanied by the least amount of background noise or "hiss".

When you are certain that you have selected the best orientation position, switch the BANDWIDTH CONTROL (B), to the sharp (finite) position (1), indicated by the diagram. When you switch to the sharp (finite) position (1), indications on your signal strength meter may decrease, remain the same or even increase. Such variation of signal strength readings is the result of the arbitrary positioning of the tuning control which was initially set at its mid-point, which may or may not be close to the frequency to which you are tuned on your receiver or tuner.



Now, carefully rotate the TUNING CONTROL (A), until highest signal strength is observed on your signal-strength indicator. If you are tuned to a station near the low end of the FM dial, the tuning knob should be rotated towards the counterclockwise extreme (88 MHz) while for stations at the high end of the FM frequency dial, rotation of THE BEAM BOX tuning knob will be towards the clockwise (108 MHz) end of its range. Again, if your tuner or receiver is not equipped with a signal strength meter or, if strong signals cause the signal strength meter to read full-scale regardless of tuning control settings, set the tuning control for clearest, noise-free and distortion-free reception.



Now, as a final check, re-test the electronic orientation of THE BEAM BOX antenna elements by switching through all four available positions to make sure that best reception is still obtained with the antenna oriented as before. In most cases, your initial orientation (while you were still employing the BROAD bandwidth position) will continue to provide the best reception. In a few instances, however, you may now find that a position adjacent to that of the first orientation may improve reception just a bit more.

Station Logging

In most listening areas, stations are located in various directions with respect to the listener. With a conventional dipole antenna or even an outdoor FM antenna it is usually not practical to re-orient the antenna every time you tune to a different station. With THE BEAM BOX, such re-orientation takes just a few seconds. Stations can be received under optimum antenna orientation conditions and reception is further improved by careful tuning of the tuning control to match the incoming frequency of the received signal. With this Owner's Manual, you will find a convenient STATION LOG table. As you experiment with THE BEAM BOX and tune each desired station

in your area for best reception, we suggest that you enter the station call letters as well as the optimum setting of the DIRECTION CONTROL, the frequency of that station, and, if you know it, the town or city in which the station's transmitter is located. In that way, every time you wish to listen to one of the stations entered in the STATION LOG, you need not go through the tuning steps just described but can immediately set THE BEAM BOX controls to their correct settings for that station.

Your FM Set Has Increased Reception Capability

If (until now) you have been using a less efficient form of FM antenna, such as a piece of wire tossed casually behind the set, a "rabbit ears" antenna or a non-rotatable outdoor FM antenna, you will find that your set is now capable of picking up signals that were previously inadequately received because they were either too weak or off in the "wrong" direction. With this increased reception capability, you may now encounter certain reception situations which require you to pay attention to hitherto ignored controls or features that may be found on your presently owned FM equipment.

AFC Circuits

If your FM set is equipped with an AFC (Automatic Frequency Control) circuit and you attempt to tune relatively weak signals formerly not received, you may find that your set will tend to "pull" the tuning circuits to a stronger station closer to the frequency of the weaker signal you are trying to receive. In such instances, it is a good idea to switch off the AFC circuits. After you have adjusted THE BEAM BOX controls, the signal strength now received may be strong enough to permit you to reactivate the AFC circuit so that the station signal remains "locked in" and will not drift over long listening periods.

Muting Circuits

Many FM tuners and receivers are equipped with special circuits which are designed to eliminate or reduce annoying static or hiss when tuning from station to station. These muting circuits sense the presence or absence of an incoming FM radio signal. When a signal of proper intensity is received, the muting circuitry is defeated and the program contained in the signal is allowed to come through. Normally, the muting threshold (signal level at which the muting circuits are defeated) is set by the manufacturer so that very weak signals are "blocked" along with their associated background noise.

If you wish to receive weak signals such as these with the aid of THE BEAM BOX, we suggest that you de-activate the muting circuitry on your FM set before initiating the tuning process on the set and on THE BEAM BOX. Most tuners and receivers have a switch on their front panels for this purpose. If your set is equipped with a variable muting threshold control, set this control to its minimum-threshold point when attempting to receive extremely weak signals.

Local-Distance Switches

Some FM tuners and receivers are equipped with LOCAL-DISTANCE switches, (See diagram A). These switches serve to introduce an attenuation network across the antenna input terminal of the set. The purpose of this attenuator is to reduce the incoming