

**BK PRECISION<sup>®</sup>**

## **Instruction Manual**

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**Model 2005B RF SIGNAL GENERATOR**

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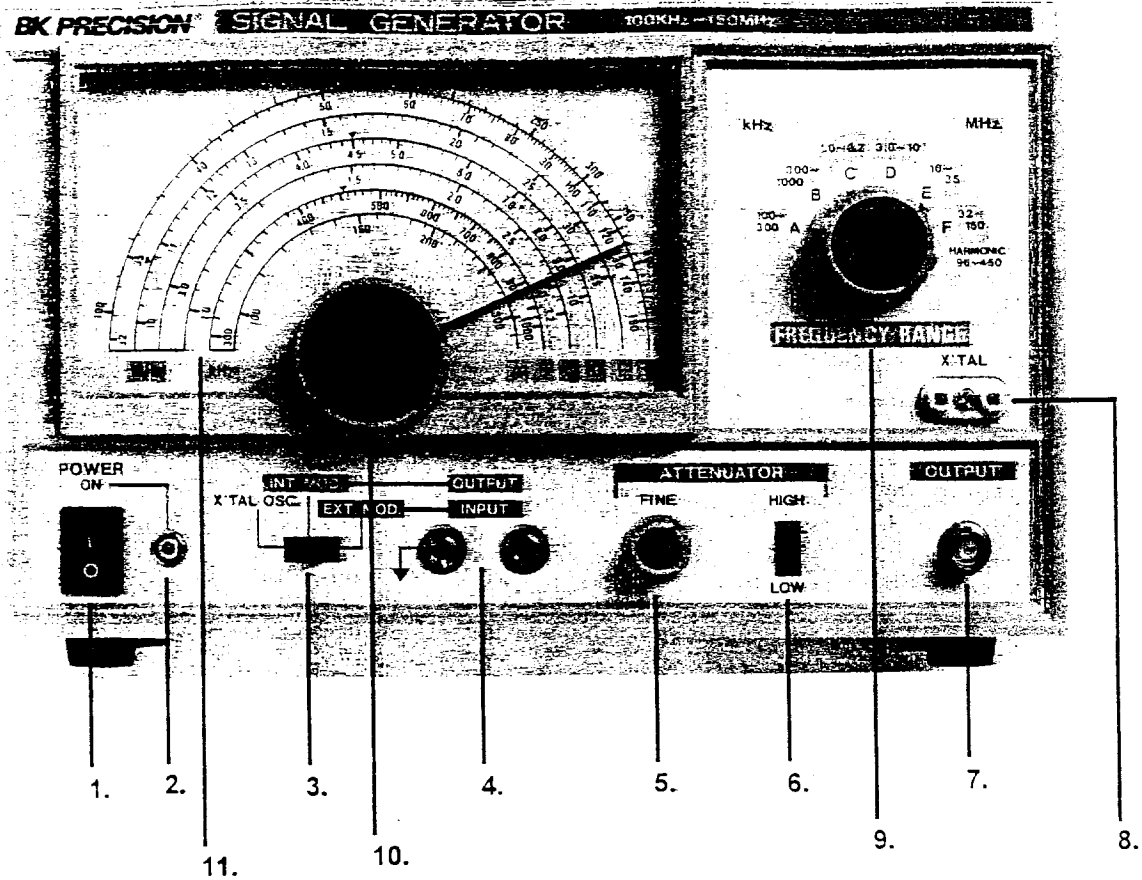
## SPECIFICATIONS

Frequency Range	: A 100KHz – 300KHz : B 300KHz – 1000KHz : C 1.0MHz – 3.2MHz : D 3.0MHz – 10MHz : E 10MHz – 35MHz : F 32MHz – 150MHz : (up to 450MHz on third-harmonics)
Frequency Accuracy	: $\pm 3\%$
RF Output	: 100mVrms. Approximately up to 35MHz.
Output Control	: HIGH – LOW switch and fine adjuster.
Modulation	: Internal 1KHz : External 50Hz – 20KHz, at less than 1Vrms.
Audio Output	: 1KHz, Min. 1Vrms. (fixed)
Crystal Oscillator HC6/u holder	: For 1 – 15MHz use crystal in type HC-6u Holder (not included)
AC Input	: 110V or 220V AC @ 50/60Hz.
Dimensions	: 5.91" x 9.84" x 5.12" (H x W x D) (150 x 250 x 130mm)
Weight	: 5.51lbs. (2.5Kg.)

## CONTROLS AND INDICATORS

1. **POWER Switch.** Turns power **ON** and **OFF**.
2. **PILOT LIGHT.** Lights when power is on.
3. **MODE Switch.** **EXT MOD:** For modulation of carrier with an external source.  
**INT MOD:** Use of internal 1KHz for modulation of external circuit testing.  
**XTAL:** Crystal oscillator output from internal 1KHz oscillator.
4. **INPUT/OUTPUT Jack.** Input jack for external modulation signal when external modulation is selected. 1KHz output when internal modulation is selected.
5. **FINE RF ATTENUATOR Knob.** Continuous RF output voltage fine adjusting knob.
6. **HIGH-LOW RF ATTENUATOR Knob.** Sets the RF output level (at **LOW** the output is lowered by 10%).
7. **RF OUTPUT Jack.** Output for RF signal.
8. **XTAL Socket.** For insertion of quartz crystal 1-15MHz in type HC-6/U holder.

9. **FREQUENCY RANGE Switch.** Has six positions for RF output frequency ranges.
10. **FREQUENCY CONTROL DIAL.** Used to adjust dial frequency.
11. **FREQUENCY DIAL.** Indicates the frequency of the output signal. Use the scale which corresponds to the **FREQUENCY RANGE** switch position. For convenience, approximate location of standard IF signals are also marked on the dial.



## OPERATION

### 1. Preparation

- (1) Set the power switch to OFF.
- (2) Connect the AC plug to the AC supply.
- (3) Connect the RF output leads to OUTPUT terminals.
- (4) Set the FINE control at center and the RF slide switch to LOW. During the tests, this switch is set at LOW or HIGH as required.
- (5) Set the FREQ RANGE switch to the operating band and rotate the frequency dial knob to the desired frequency.

### 2. Connections

The RF leads are connected to the input of the circuit under test. The red terminal is at high potential or "hot", and black is at earth potential for chassis connection.

For the RF signal at the receiver antenna input, connect a 50 to 200 $\Omega$ , 1/4W resistor in series. When checking sets with a rod antenna, connect leads to a coil with a few turns of wire and couple the coil to the antenna.

In checking RF and IF amplifier circuits, connection should be made through a small capacitor (1 to 5pF) in order to prevent detuning effects.

**NOTE:** When connecting directly to the input circuit, make certain there is no

high DC voltage present. Otherwise, connect a blocking capacitor (0.05 $\mu$ F to 100pF), depending on the frequency.

### **3. Modulated Carrier, Internal Source**

Set the mode switch at INT. MOD.

By tuning the receiver to the generator frequency or vice versa, an audio tone will be heard in the loudspeaker. An audio voltmeter should be connected across the speaker terminals when aligning the internal circuit. A dummy resistor with suitable power rating can be used in place of the moving coil.

It is advisable to keep the RF signal level as low as possible in order to prevent overloading the transistors or electron tubes in the circuit. Excessive input voltage will cause AGC action and/or two resonance points to appear and proper alignment or adjustment would be impossible.

### **4. Modulated Carrier, External Source**

Set the mode switch to EXT. MOD.

Connect leads from an external audio generator to the INPUT.

Frequencies up to 15KHz can be used for modulation at RF above 3MHz. The audio input voltage should not exceed 2V; this is to prevent modulation distortion.



## 5. Unmodulated Carrier

Set the mode switch to EXT. MOD. There should be no connection to the input.

The RF signal can be used in testing and receiver with a beat oscillator, or circuits that do not require a modulated signal.

The RF signal can be applied to a sweep generator for the marker signal.

## 6. Crystal Oscillator Output

Control settings:

Set mode switch to XTAL. Insert a crystal in FT-243 holder in the XTAL socket.

Set RF output switch to LOW.

Set FREQ. RANGE switch to "F" and frequency dial to 100KHz.

Set FINE control to minimum.

The output signal is treated in the same manner for the unmodulated carrier with the exception that the output level cannot be adjusted.

**NOTE:** If a RF signal is required at the same time, set the output frequency with the FREQ. RANGE switch and frequency dial as required. Adjust the RF FINE control knob.

## 7. AF Output 1KHz

Control Settings:

Mode Switch at 1NT. MOD.

FREQ RANGE switch at "F" and frequency dial to 100MHz.

Connect leads from OUTPUT to the test circuit. Use an external potentiometer, 100K – 1M $\Omega$ , to lower the voltage.

### 8. Oscillator Frequency Calibration

The RF oscillator frequency can be calibrated to a high degree of precision using the harmonics of the internal crystal oscillator and an external all-wave receiver. The latter is utilized as a frequency transfer unit.

- (1) Set the mode switch to XTAL.
- (2) Insert the “standard frequency” crystal, preferably at a multiple of 1MHz.  
For spot frequency checking to be 10.7MHz use a 10.7MHz crystal.
- (3) Set the RF slide switch to LOW.
- (4) Connect the RF output to the receiver input direct or through a small coupling capacitor to the rod antenna.
- (5) In the following example use a 15MHz crystal will be given.

- (6) Tune the receiver to 5MHz or 5<sup>th</sup> harmonic of 1MHz. Then by carefully tuning both the oscillator and is adjusted to zero beat and the dial reading is noted. At other frequencies spaced 1MHz apart, the same procedure is repeated oscillator setting – tuning the receiver – returning oscillator and noting the reading on the dial.

Practical use of harmonics up to the tenth or higher is possible. However, care must be exercised in selecting the proper harmonic, especially at high RF when a relatively low frequency crystal is used.

**NOTE:** When a receiver equipped with a beat frequency oscillator is used the measurements can be simplified. The “zero-beat” condition is at the point where the steady beat is heard most clearly.

## **MAINTENANCE**

### **WARNING**

*The following instructions are for use by qualified service personnel only. To avoid electrical shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.*

*Line voltage is present when covers are removed and the unit is plugged in, even if turned off. Unplug the generator before performing servicing procedures.*

### **CASE REMOVAL**

To remove the case from the RF generator, perform the following steps:

1. Unplug the unit.
2. Remove the four screws located around the front panel and the two screws by the line cord jack and at the line selection voltage switch.
3. Slide the case straight back.

4. To reinstall the case, reverse the procedure.

## **FUSE REPLACEMENT**

If the fuse blows, the pilot light will go out and the Generator will not operate. The fuse should not normally open unless a problem has developed in the unit. Try to determine and correct the cause of the blown fuse, then replace only with a 0.3A, 250V, 5 x 20mm fuse (for 120VAC) and 0.15A, 250V, 5 x 20mm (for 240VAC). The fuse is located inside the unit on a printed circuit board on the left hand side (**POWER** switch side) of the unit. For access to the fuse, remove the case from the Generator by following the instructions in the **CASE REMOVAL** paragraph located previously in this section of the manual.

## Service Information

**Warranty Service:** Please return the product in the original packaging with proof of purchase to the below address. Clearly state in writing the performance problem and return any leads, connectors and accessories that you are using with the device.

**Non-Warranty Service:** Return the product in the original packaging to the below address. Clearly state in writing the performance problem and return any leads, connectors and accessories that you are using with the device. Customers not on open account must include payment in the form of a money order or credit card. For the most current repair charges contact the factory before shipping the product.

Return all merchandise to B&K Precision Corp. with pre-paid shipping. The flat-rate repair charge includes return shipping to locations in North America. For overnight shipments and non-North America shipping fees contact B&K Precision Corp..

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1031 Segovia Circle  
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**Include with the instrument your complete return shipping address, contact name, phone number and description of problem.**