012-04955D
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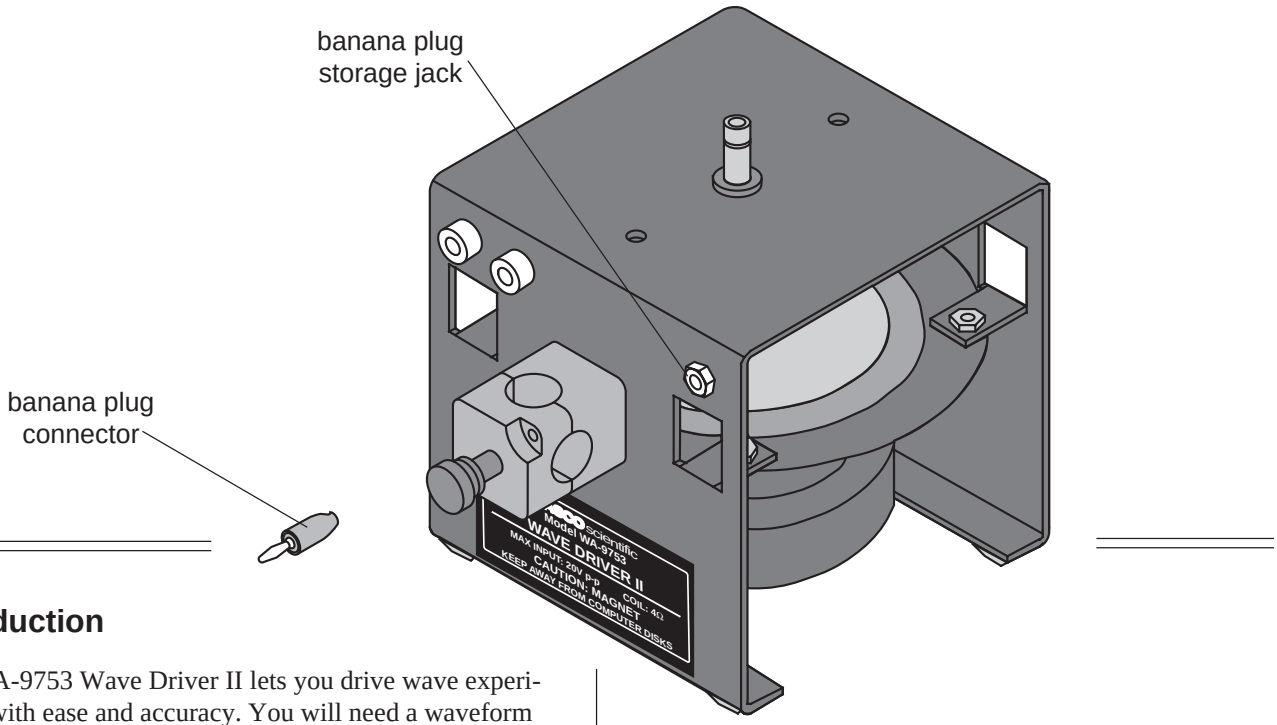
***Instruction Sheet for the PASCO Model WA-9753***

# WAVE DRIVER II




## Introduction

The WA-9753 Wave Driver II lets you drive wave experiments with ease and accuracy. You will need a waveform generator with an amplifier capable of producing currents of up to 1.0 amps—we recommend the PASCO Model PI-9587B Function Generator with a built-in amplifier and an accurate, digital frequency readout, or the PI-9598 Student Function Generator.

The Wave Driver II is a strong, long-throw speaker, with an attached drive arm. The speaker will vibrate with any frequency you can produce with your waveform generator, from 0.1 Hz to 1 kHz, and with amplitudes up to 5 mm p-p at the low end of the frequency range. The waveform need not be a sine wave; other waveforms, such as square, triangular, or sawtooth, can be used.

You can attach the Wave Driver II to a wire or string using the provided banana plug connector, as shown on the back of the page. When not in use, store the banana plug connector in the banana jack mounted in the housing. You can also design your own connectors. An easy method is to solder a piece of stiff wire to a banana plug connector, then bend the wire as needed.

The Wave Driver II is designed to be mounted on a 1/2" rod in either a vertical or horizontal position.

## Operation

① Connect the drive arm to your experimental apparatus, using a banana plug connector.

② Plug the output from your function generator/amplifier into the banana plug receptacles on the front of the Wave Driver II.

③ Adjust the frequency and amplitude of the function generator to produce mechanical waves with the frequency and amplitude that you want. The current should not exceed 1.0 amps.

**Warning:** Application of electrical voltages and/or currents in excess of the values listed in the product specification section will damage this product, create a safety hazard and may endanger the operator. This device does not use or produce voltages which exceed 42.4VAC peak, 30VAC RMS or 60VDC.



PASCO scientific ®
*10101 Foothills Blvd. • Roseville, CA 95747-7100*
*Phone (916) 786-3800 • FAX (916) 786-8905 • www.pasco.com*

## Suggested Uses

① **Wave Demonstrators**

Use the Wave Driver II to drive a wave demonstrator, such as PASCO's Model SE-9600 or SE-9604, at any desired frequency and amplitude.

② **Waves in a wire or string**

Use it to produce waves in a stretched wire or string, as shown below. You can determine resonance frequencies as a function of length, or you can examine the relationship between wave velocity and the tension and mass per unit length of the string or wire.

③ **Driven Harmonic Motion**

Use it to drive a mass on a spring and compare the amplitude of the oscillations with drive frequency. To attach a spring to the Wave Driver, remove the plastic cover to the banana plug connector by unscrewing it. There will be a hole through the connector to attach the end of the spring. Resonance modes of coupled oscillators can be investigated using air track gliders coupled by springs.

④ **Chladni Plates**

Use it to vibrate sheets of metal or plastic, and observe the standing wave patterns that are formed at resonant frequencies. The patterns are easily seen by sprinkling sand onto the surface of the metal or plastic sheet.

⑤ **Molecular Motion**

Use the Wave Driver II with a Molecular Motion Model, such as PASCO Model SF-8563, to demonstrate the kinetic theory of gases.

⑥ **Ripple Tanks**

Use the Wave Driver II as the wave source in a ripple tank. You'll have full control of the wavelength.

**CAUTION:** When the maximum amplitude of the wave driver is exceeded, the motion limiting ring will hit the housing causing a loud buzzing sound.

## SPECIFICATIONS

**Frequency Range:** 0.1 Hz to 1 kHz.
**Amplitude p-p:** 7 mm at 1 Hz, decreasing with increasing frequency.
**Input Impedance:** 4ý
**Max Current:** 1.0 amp.
**Nominal Current Req'd:** < .25 amp
**Max Input:** 20V peak-to-peak

## Limited Warranty

PASCO scientific warrants this product to be free from defects in materials and workmanship for a period of one year from the date of shipment to the customer. PASCO will repair or replace, at its option, any part of the product which is deemed to be defective in material or workmanship. This warranty does not cover damage to the product caused by abuse or improper use. Determination of whether a product failure is the result of a manufacturing defect or improper use by the customer shall be made solely by PASCO scientific. Responsibility for the return of equipment for warranty repair belongs to the customer. Equipment must be properly packed to prevent damage and shipped postage or freight prepaid. (Damage caused by improper packing of the equipment for return shipment will not be covered by the warranty.) Shipping costs for returning the equipment, after repair, will be paid by PASCO scientific.

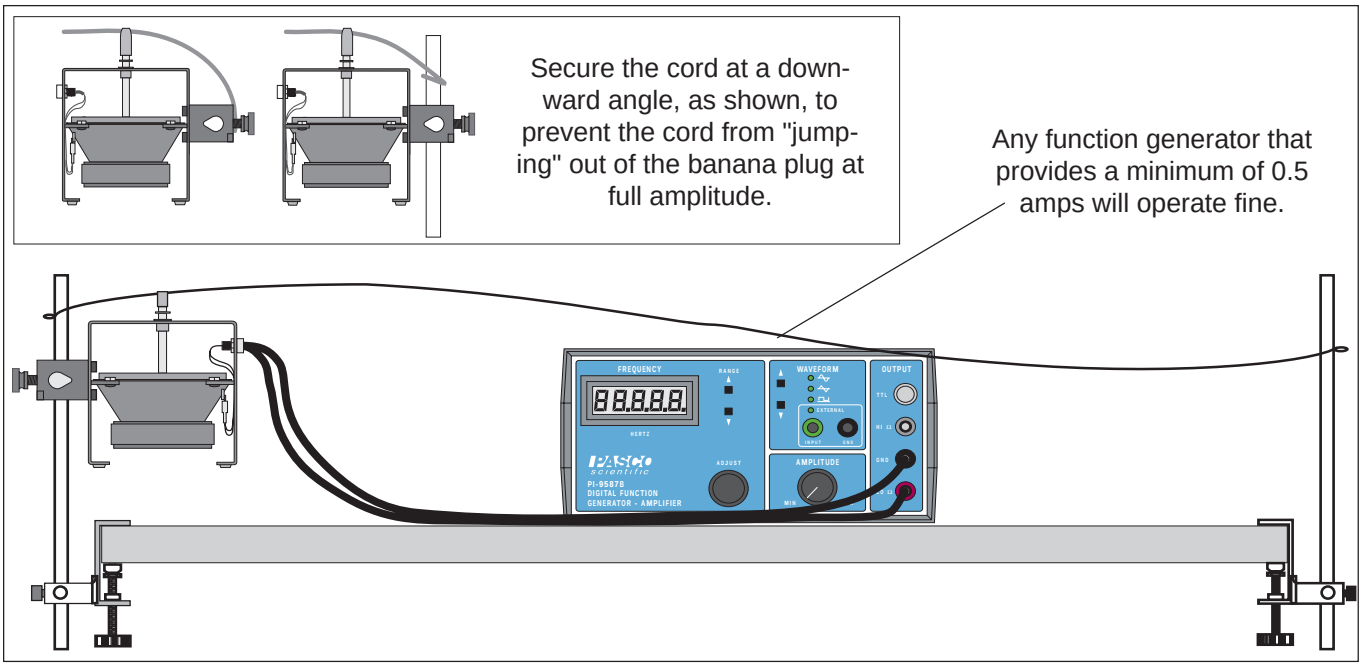



**Figure 1 Waves in a Wire or String**