Wave Driver (WA-9855)

Features:

1. Drive post
2. Rod clamp
3. Fuse holder
4. Banana jacks

Included equipment:

- Wave Driver (WA-9855)
- Elastic cord
- Extra fuses (2)

Required equipment:

- Banana Plug Patch Cords (SE-9751)
- One of the following function generators:
  - 550 Universal Interface (UI-5001)
  - 850 Universal Interface (UI-5000)
  - Sine Wave Generator (WA-9867)
  - Function Generator (PI-8127)

Introduction

The Wave Driver is a strong, long-throw speaker with an attached drive post. The top of the drive post has a slotted hole into which the included elastic cord can be directly inserted. The speaker will vibrate at any frequency from 0.1 Hz to 5 kHz, with amplitudes up to 7 mm peak-to-peak at the low end of the frequency range.

The Wave Driver allows you drive wave experiments with ease and accuracy. You will need a function generator with an amplifier capable of producing a minimum of 8 V at 0.5 A. (The **Recommended equipment** section lists function generators provided by PASCO which meet this requirement.) The waveform need not be a sine wave; other waveforms such as square, triangle, or sawtooth can be used.

You can attach a wire or string to the Wave Driver directly, either by inserting the wire or string directly into the slot on the drive post and tying it off to a support rod, or by threading it into the hole beneath the slot and tying it to the post itself. Other accessories can be connected to the Wave Driver by inserting their plug directly into the hole on the end of the drive post.

The Wave Driver is designed to sit upright, resting on the rubber "feet" on the base. It can also be mounted on a rod up to 12 mm (1/2 in) in diameter in either a vertical or horizontal position using the rod clamp. The bottom of the wave driver also includes a hole which can be used to mount the sensor upright on any 1/4-20 threaded rod. (See Figure 1.)

Figure 1. Options for mounting the Wave Driver

Operation

1. Connect the string or experimental apparatus to the drive post by either of the following methods:
   a. Tie the string or wire directly to the drive post, as shown in Figure 2.
   b. Insert the string or wire into the slot on top of the apparatus, as shown in Figure 3, so that it is held in place by friction. Tie the end of the wire or string to a support rod.

Figure 2. Direct attachment to the drive post

Figure 3. Attachment to a support rod through the drive post

2. Plug the output from your function generator into the banana jacks on the front of the driver.
3. Adjust the frequency and amplitude of the function generator to produce mechanical waves with the desired frequency and amplitude. **The current should not *under any circumstances* exceed 1.2 amperes!**

Suggested Uses

Wave Demonstrators

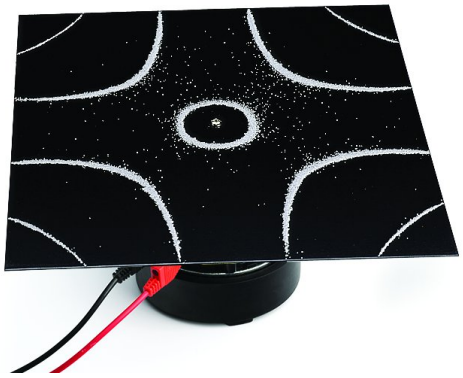
Use the Wave Driver to drive a wave demonstrator, such as the Transverse Wave Demonstrator (SE-9600).

Wave on a Wire or String

Use the driver to produce waves in a stretched wire or string. Determine the resonant frequencies as a function of length, or examine the relationship between wave velocity and the tension and mass per unit length of the string or wire.

Chladni Plate (WA-9406)

Use the driver to vibrate sheets of metal and observe the standing wave patterns that are formed at resonant frequencies.



Driven Harmonic Motion

Drive a mass hanging on a Longitudinal Wave Spring (WA-9401) and compare the amplitude of the oscillations with the drive frequency. To set up this exeriment, mount the wave driver on a rod with the drive post facing downward, then thread a string through the hole on the drive post and tie the string to one end of the spring. Resonant modes of coupled oscillators can be studied using air track gliders or carts on a track coupled by springs.

Resonant Loops and Strips

Use the driver to vibrate a resonant loop to show standing waves on a wire. You can also vibrate resonant strips to demonstrate standing waves, harmonics, and the relationship between length, frequency, and resonance.

Metal Resonance Strips (WA-9404)

Resonance Wire Loop (WA-9405)

Troubleshooting the Driver

If at any time the Mechanical Wave Driver fails to work, follow these steps:

1. Check the fuse. If the fuse is "blown", replace it with a similarly rated fuse: 1.0 A, 250 V. When replacing the fuse, be sure that the fuse holder is fully tightened.
2. If the fuse is not "blown", check that the fuse holder is fully tightened. If it is not screwed in all the way, power may not be able to get to the unit even if the fuse is in working condition.

Specifications and accessories

Visit the product page at pasco.com/product/WA-9855 to view the specifications and explore accessories. You can also download support documents from the product page.

Technical Support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to answer your questions or walk you through any issues.

Chat	pasco.com
Phone	1-800-772-8700 x1004 (USA) +1 916 462 8384 (outside USA)
Email	support@pasco.com

Regulatory Information

Limited Warranty

For a description of the product warranty, see the Warranty and Returns page at www.pasco.com/legal.

Copyright

Trademarks

Product end-of-life disposal

This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle or disposal service, or the place where you purchased the product. The European Union WEEE (Waste Electronic and Electrical Equipment) symbol on the product or its packaging indicates that this product must not be disposed of in a standard waste container.

CE statement

This device has been tested and found to comply with the essential requirements and other relevant provisions of the applicable EU Directives.