Instruction Manual and Experiment Guide for the PASCO scientific Model WA-9401

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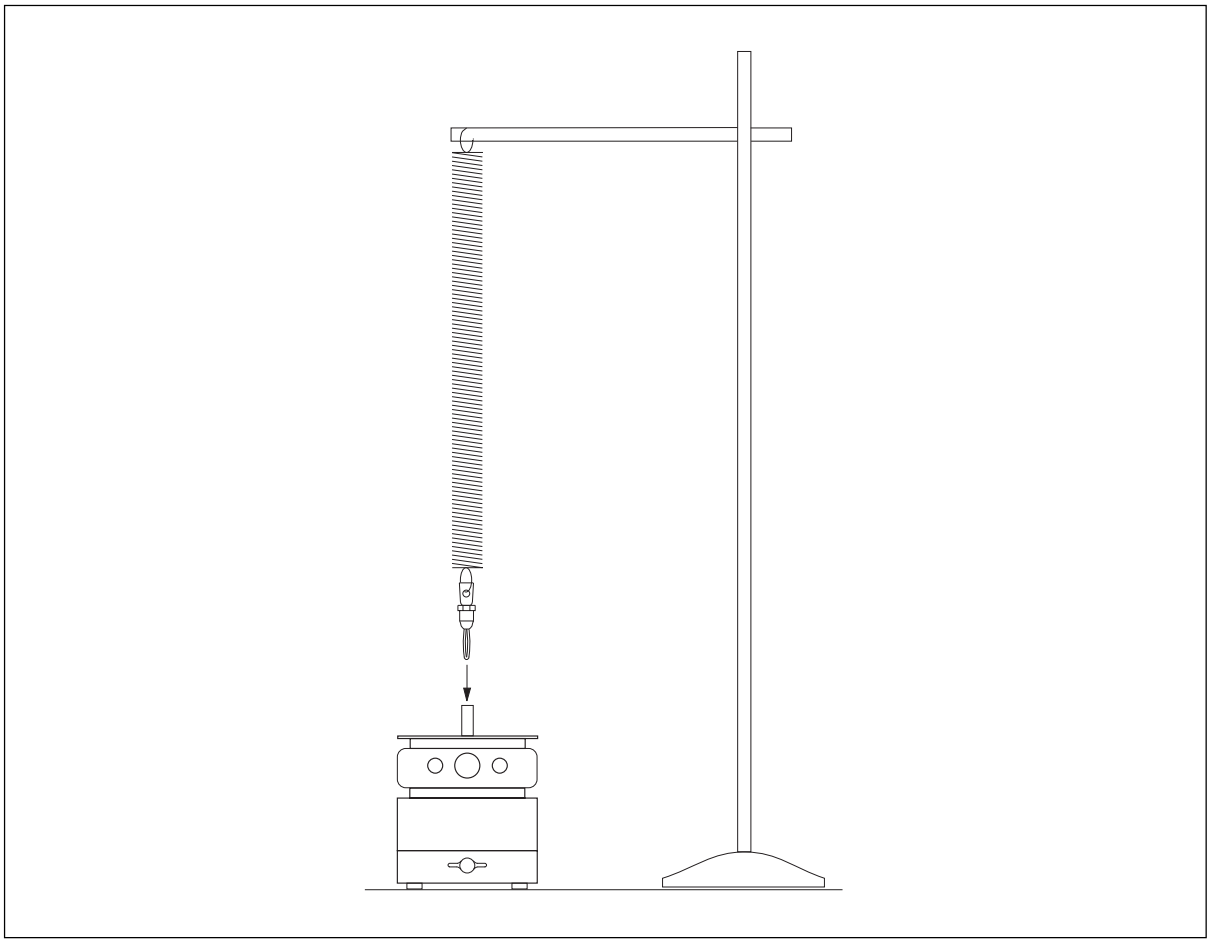
LONGITUDINAL WAVE SPRING



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PASCO® scientific

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Credits

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This manual edited by: Dave Griffith

Equipment Return

Should the product have to be returned to PASCO scientific for any reason, notify PASCO scientific by letter, phone, or fax BEFORE returning the product. Upon notification, the return authorization and shipping instructions will be promptly issued.

➤ **NOTE:** NO EQUIPMENT WILL BE ACCEPTED FOR RETURN WITHOUT AN AUTHORIZATION FROM PASCO.

When returning equipment for repair, the units must be packed properly. Carriers will not accept responsibility for damage caused by improper packing. To be certain the unit will not be damaged in shipment, observe the following rules:

① The packing carton must be strong enough for the item shipped.

② Make certain there are at least two inches of packing material between any point on the apparatus and the inside walls of the carton.

③ Make certain that the packing material cannot shift in the box or become compressed, allowing the instrument come in contact with the packing carton.

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Introduction

The PASCO Longitudinal Wave Spring is designed to demonstrate longitudinal waves. Although it may be used in several different configurations, we suggest the following for ease of set up and clear, well defined waves.

Additional Equipment Required:

- Mechanical Driver, PASCO Model SF-9324 or WA-9753
- Function Generator with Amplifier, PASCO Model PI-9587A or PI-9598
- Support for the non-driven end of the spring.

Setup Procedure

① Hook one end of the spring through the hole in the banana plug assembly.

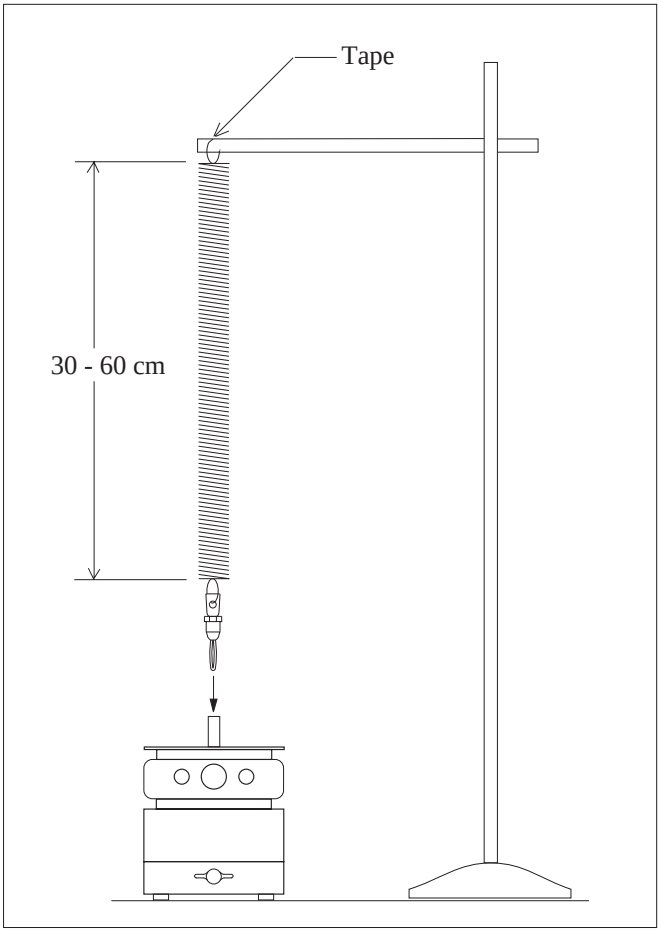
② Insert the banana plug on one end of the spring into the drive shaft of the Mechanical Driver.

③ Suspend the other end of the spring from a ring stand or other support such that the length of the spring is between 30 and 60 cm.

(It may be desirable to tape the loop on the end of the spring to the support so that it does not move once resonance is attained.)

④ Connect the Mechanical Driver to a function generator capable of driving a speaker. (The PASCO PI-9587B Digital Function Generator/Amplifier is excellent for this purpose.)

⑤ Start driving the Mechanical Driver at about 10 Hz with approximately 1 mm of amplitude and slowly increase the frequency. At various frequencies it will be noted that certain parts of the spring seem to stand still (nodes) while others oscillate rapidly (anti-nodes). As the frequency is increased the number of nodes and anti-nodes will increase and the distance between them become shorter. It may be necessary to decrease the driving amplitude when resonant points are attained.



Equipment Setup

⑥ Graph the relation between the number of nodes and the driving frequency. Change the length (thus the tension) of the spring and see if different frequencies are required for the same number of nodes.

➤ **NOTE:** A light background is best for viewing the nodes and anti-nodes.

Notes

Technical Support

Feed-Back

If you have any comments about this product or this manual please let us know. If you have any suggestions on alternate experiments or find a problem in the manual please tell us. PASCO appreciates any customer feed-back. Your input helps us evaluate and improve our product.

To Reach PASCO

For Technical Support call us at 1-800-772-8700 (toll-free within the U.S.) or (916) 786-3800.

Contacting Technical Support

Before you call the PASCO Technical Support staff it would be helpful to prepare the following information:

- If your problem is with the PASCO apparatus, note:

  Title and Model number (usually listed on the label).

  Approximate age of apparatus.

  A detailed description of the problem/sequence of events. (In case you can't call PASCO right away, you won't lose valuable data.)

  If possible, have the apparatus within reach when calling. This makes descriptions of individual parts much easier.

- If your problem relates to the instruction manual, note:

  Part number and Revision (listed by month and year on the front cover).

  Have the manual at hand to discuss your questions.