

# HYDRAULIC RAM PUMP

H31

A compact experiment for use with the Hydraulic Bench (H1F) to demonstrate the use of water hammer to create a pumping action.



## KEY FEATURES

- Uses water hammer effect to pump water
- Works with Tecquipment's Hydraulic Bench for easy installation
- Includes air vessel to reduce hydraulic shock
- Supplied with textbook 'Hydraulic Ram Pumps'
- Includes header tank and all necessary pipework
- Additional weights to adjust cycle times
- Ideal for demonstrations to small groups of students

## LEARNING OUTCOMES

- Demonstration of the water hammer effect to produce a pumping action

## KEY SPECIFICATIONS

- Air vessel
- Header tank and fittings
- Delivery pressure gauge
- Textbook
- Five valve weights

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## DESCRIPTION

The Hydraulic Ram Pump uses the water hammer effect, where the momentum of a column of moving water in a pipe causes the water hammer.

The ram pump is not a normal mechanically operated pump. A column of water in the supply (drive) pipe from a header tank, moving at low velocity, is similar to a 'plunger'. The energy in the plunger forces water from the supply into a delivery pipe. This exchanges the momentum of a large amount of water into energy that pumps a smaller amount of water up a hill or gradient.

The Hydraulic Ram Pump fits onto and works with TecQuipment's Digital Hydraulic Bench (H1F)\*. The pump also includes a textbook that introduces the reader to all aspects of ram pumps.

The apparatus has three main parts: the header tank, the pump and the interconnecting pipe work. The header tank mounts to a suitable wall.

The pump has:

- a supply pipe fitted with an inner and outer valve,
- an air vessel to reduce hydraulic shock, and
- a delivery section.

The outer valve has a weight platform, for loading with the weights provided. This changes the pump's cycle times.

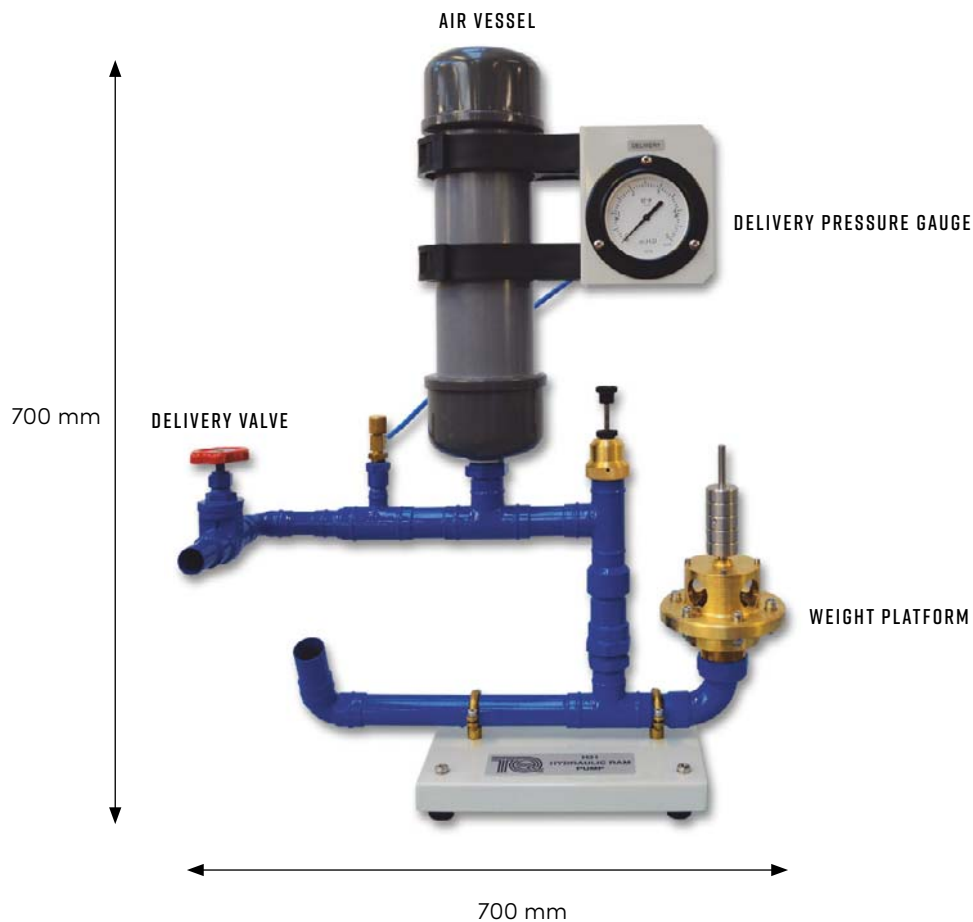
## STANDARD FEATURES

- Supplied with a comprehensive user guide and textbook
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer

## ESSENTIAL BASE UNIT

- Digital Hydraulic Bench (H1F)\*

\* This product will also work with an existing TecQuipment Volumetric Hydraulic Bench (H1D)



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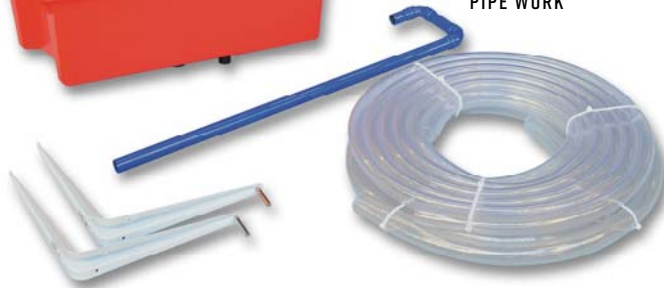


SHOWN WITH TECQUIPMENT'S DIGITAL HYDRAULIC BENCH (HIF)

HEADER TANK



PIPE WORK



WALL BRACKETS



HEADER TANK AND OTHER PARTS (INCLUDED)

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## SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

### NETT DIMENSIONS (ASSEMBLED):

Ram pump: 700 mm long x 700 mm high x 200 mm

### NETT WEIGHT:

20 kg

### APPROXIMATE PACKED DIMENSIONS:

0.3 m<sup>3</sup> and 25 kg

### VALVE WEIGHTS:

5 off

### TEXTBOOK:

Hydraulic Ram Pumps: A Guide to Ram Pump Water Supply Systems by T Jeffrey

## OPERATING CONDITIONS

### OPERATING ENVIRONMENT:

Laboratory

### STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

### OPERATING TEMPERATURE RANGE:

+5°C to +40°C

### OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C