

# Bar Breaker Apparatus

## Heat Expansion



**HL0232-001 Natural Gas**

### Description:

This apparatus is supplied with set of 10x small cast iron rods used for breaking.

This instrument permits the fundamental heat expansion and contraction experiment and demonstrates the enormous forces involved.

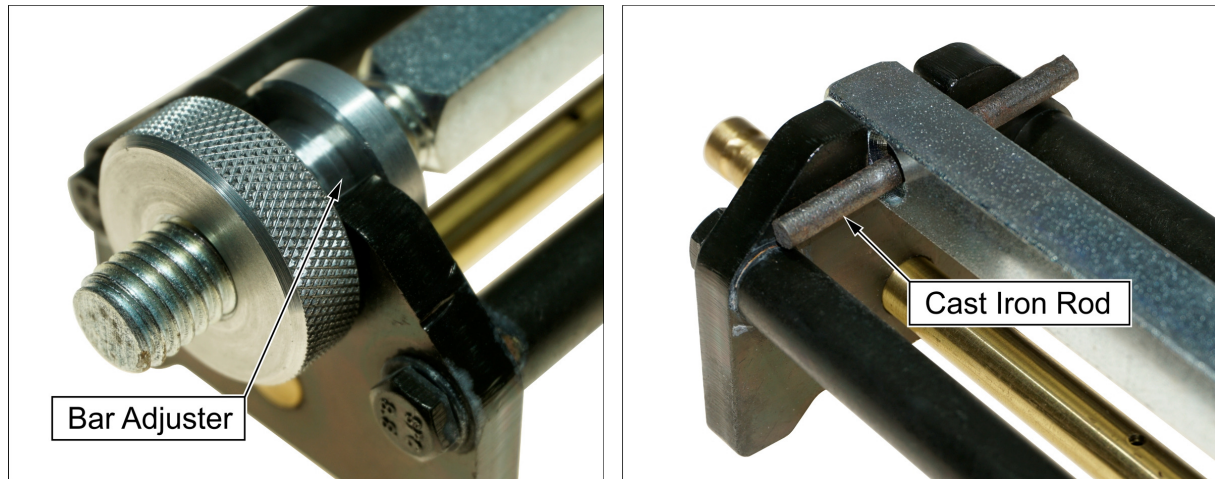
A strong steel base is fitted with a gas burner tube. A strong steel bar rests in the base and can be heated by the gas burner so that it expands.

The force of expansion presses against a cast iron rod until it breaks against the end of the body with a loud sound.

The strong adjustable device at the threaded end of the large bar can set the cast iron rod on the inside face of the body to break during expansion, or the rod can be set on the outside face of the body to break as the iron bar cools and retracts.

The burner tube is clearly marked for the type of gas to use. Models are available for Natural Gas, LP Gas and Town Gas (Coal Gas).

Length: 330mm	Width: 65mm	Height: 60mm	Weight: 1.2kg
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## The Experiment:

Take one of the small cast iron rods and pass it through the small cross-hole in the end of the square section steel bar.

Place the steel bar in the groove along the length of the cast iron base so that the large round nut on the thread of the bar engages the body. The small cast iron rod should be resting against the inner face of the body at the opposite end of the body.

Turn the large nut anti-clockwise so that the cast iron rod moves forward to press **FIRMLY** against the inside face of the body's end plate.

Check that the gas type available is the same as the gas type marked on the bar breaker. Then, with a rubber hose, connect the gas supply to the connection tail and turn on the gas. With a match, light the small gas jets along the burner tube under the square bar and allow the bar to heat. The cast iron rod will be pressed with increasing force against the body and will finally break with a loud sound.

To show the effect of contraction, turn off the gas flame, but quickly, while the bar is still very hot, turn the large nut anticlockwise so the cross-hole through the large bar appears on the outer side of the body. Carefully slide another cast iron rod through the hole **WITHOUT TOUCHING THE VERY HOT BAR (USE FORCEPS FOR SAFETY)**. Turn the large nut clockwise until the cast iron rod presses **FIRMLY** against the outer face of the body. As the steel bar cools down and contracts, it again will break the cast iron rod with a loud sound.

## Caution:

This instrument can become very hot when being used and will take a long time to cool down. To prevent injury, be careful that a breaking cast iron rod cannot strike an observer. Strictly supervise the lighting of the burner, the insertion of the cast iron rods and any adjustments to the heated steel bar.

Spare set of 10x cast iron pins. PA0230-010

Designed and manufactured in Australia