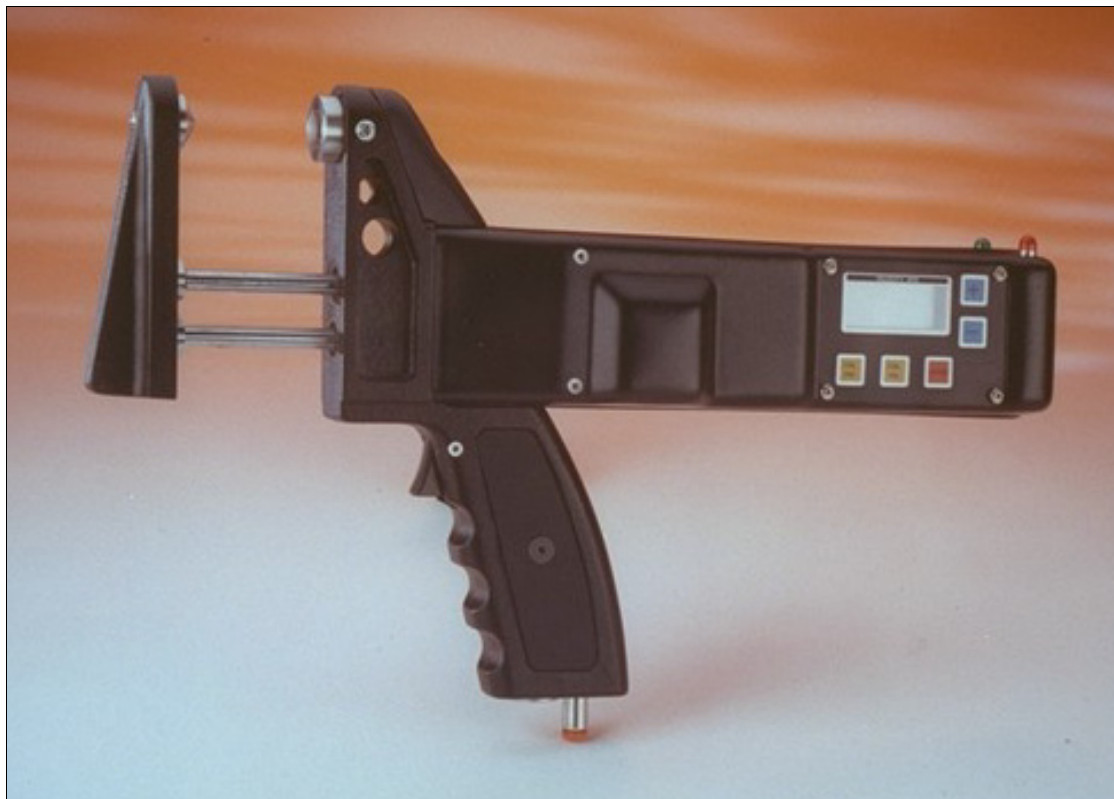


# DUCTILE CAST IRON METAL QUALITY TESTER



**QUALIRON** consists of a hand held caliper/electronic unit fitted with a display giving velocity readings and acceptance band indicator lamps. The caliper is of lightweight durable construction, well balanced to reduce operator fatigue and allow accurate operation by relatively unskilled personnel. The operator simply places the caliper jaws over a suitable part of the casting and presses the trigger.

**QUALIRON** automatically clamps the casting between the transducer and the anvil and provides a reading of the sound velocity.

**QUALIRON** also indicates if the casting is within preset limits of acceptance.

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**Non-Destructive**  
**Rapid & Accurate**  
**Reliable & Simple**

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**Instant Results**  
**As-Cast Surfaces**  
**Portable**



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## FEATURES

- Totally Non-destructive test
- Rapid testing of individual castings
- Simple and rapid setup procedure
- Digital Velocity Display
- Visual indication of Accept or Reject
- Automatic Pneumatic Caliper Clamping
- All user Controls and Displays mounted in Caliper
- Virtually no operator training required
- Thickness range 10 to 100mm
- Velocity range 1000 to 9999 m/sec
- Caliper weight 1.65Kg

The increasing use of spheroidal graphite iron in high duty applications has been encouraged by the ease and rapidity with which individual castings may now be tested for metal quality. In place of skilled and laborious section cutting, polishing and examination under a microscope, the QUALIRON provides a very rapid method of checking, giving an instant accept or reject indication for each and every casting. Testing may be carried out by non-technical personnel on the foundry floor.

The method is based on the measurement of sound velocity of the metal. Generally the higher the velocity the better the physical properties (see separate report for details). It is also well proved that sound velocity bears a closer relationship to mechanical properties than does photomicrography. The determination of metal quality by assessment of the amount of graphite in the nodular form by photomicrography is unreliable as results vary from viewer to viewer. That method in any case samples only a very small area of a flat plane in a casting, which has been destroyed by the test.

Velocity is the product of the time taken for a pulse of ultrasound to travel through a casting section and of the distance traveled. The time is measured by the ultrasound system and the distance traveled by a specially designed hand-held caliper. By lightly clamping a convenient part of the casting between the probe face and the measuring anvil both the necessary

parameters are established and are processed by the ultrasound system to show, on an LCD, the sound velocity of the metal in metres/second.

The procedure for establishing a minimum velocity for acceptable metal quality in a particular design of casting is very simple. Firstly the velocity of a small number of castings is measured using the QUALIRON system, then the quality of those castings is assessed by normal destructive methods. Velocity values can then be allocated to respective properties. Once the minimum acceptable velocity has been established the monitoring system can be set by adjusting the Accept/Reject controls to that velocity. In subsequent tests any casting of a similar type and treatment but with a slower velocity, and therefore sub-standard quality, will trigger a red signal lamp, and a casting with a faster velocity will provide a green signal. Once adjusted for Accept/Reject level castings may be tested at the rate of 700 per hour.

## SPECIFICATION

### Caliper

Velocity Range:	1000 - 9999m/sec
Thickness Range:	10 - 100mm
Display:	4 Digit LCD 12.5mm Character
Dimensions:	360mm x 250mm x 80mm
Weight:	1.65Kg

### Power Pack

Electrical Supply:	110V 60Hz or 220/240V 50Hz
Air Supply:	4 Bar
Dimensions:	260mm x 300mm x 150mm
Weight:	6.5Kg