

## Hardness

### Wallace Bench Hardness Testers

Wallace offer both macro and micro bench-mounted instruments for evaluating the hardness of rubber and soft plastics in two different measurement scales – IRHD and Shore. All of these robustly designed instruments conform to international testing standards:

- H14 Macro IRHD Hardness Tester
- H12 Micro IRHD Hardness Tester
- H17A/C/D/O Macro Shore Hardness Tester
- H17M Micro Shore Hardness Tester

### Versions

To suit customers' varying needs and budgets, Wallace offer 4 versions of each bench-mounted model from a basic, standalone version to a computer-linked version:

#### Hardness Tester - Basic Model

Features include:

- Touch button, automatic operation
- Visual LED indication of foot and indenter contact
- Digital display with programmable resolution to 0.1, 0.5 or 1 units
- Built-in diagnostics to check the instrument's internal settings

#### Hardness Tester - Basic Model with printer

The compact, high-speed, 24 character-width printer, provides a permanent record of results and instrument settings. Various parameters can be set including:

- Sample identification with auto-increasing suffix
- Date and time of test
- Traceability of aborted tests

#### Hardness Tester - Basic Model with printer and Data Input Terminal

The data input terminal contains a 16 character, two-line LCD display and QWERTY keypad. It supplies additional information on the operation of the hardness tester and offers the user several new options. Test parameters are more easily set. Data for operator and sample Identification can be entered. The timing of the primary and secondary indenter loads (H12 and H14) can also be pre set. Other features include:

- Data and time recording and traceability
- Calibration check reminder

#### Hardness Tester - Basic Model with PC Interface

This version provides a RS232C interface. Data is transmitted at the end of a test, allowing a PC to collect the results. An optional X23 add-in software tool for Excel is available.

# Hardness: *H12 Micro IRHD Hardness Tester*

The Wallace H12 Micro Hardness tester allows accurate and repeatable measurements of small thin samples such as O rings.

## Features

- Tests small /thin samples and O rings
- One touch fully automatic operation
- Accurate and consistent results
- Easy access to sample area
- Operator dependency reduced
- Range of sample tables
- Four models offered



The Wallace H12 is a digital bench-mounted hardness tester that measures in IRHD the hardness of most rubber samples. In particular it has been designed to accurately test thin sections and small test pieces such as O-rings.

The robust, 'C' frame design allows the operator easy access from front and sides to safely load and remove samples. The indenter mounting is essentially frictionless and its position sensed by a linear variable differential transformer, providing the instrument with outstanding sensitivity. Adjustable anti-vibration feet reduce the effect of external vibration.

By simply pressing the start button, the instrument functions automatically, allowing accurate, repeatable results to be recorded in much less time than traditional models.

As minimal training is required, new operators soon become confident with the H12, achieving consistent readings from the outset.

A range of optional sample tables is available, designed to locate samples of varying shapes and special sample holding fixtures. It includes the O-ring adaptor (H19/ORR) that ensures the centre of the ring is directly beneath the centre line of the indenter.

Keys on the front panel easily adjust the measuring head up and down to suit the sample height. Once the start key is pressed, the foot descends to secure the sample, followed by the indenter, which lowers through the centre of the foot with a primary force of 8.3mN to find its datum position. After 5 seconds, in line with the testing standards, the force is increased to 153.3mN and applied for a further 30 seconds. At this point the instrument identifies the indenter position and the hardness value is automatically frozen and displayed clearly on the LCD screen.

Four instrument models are offered:

#### Micro IRHD Hardness Tester - Basic Model, H12/1

- Touch button, automatic operation
- Visual LED indication of foot and indenter contact
- Digital display with programmable resolution
- Built-in diagnostics to check instrument's internal settings

#### Micro IRHD Hardness tester - Printer Model, H12/2

- Same specification as H12/1 plus:
- Compact printer with high speed print capability
- 24 character column print output
- Date and time recorder
- Traceability of aborted tests

#### Micro IRHD Hardness tester - Data Terminal & Printer Model, H12/3

- Same specification as H12/2 plus:
- A data input terminal with 16 character two line display and QWERTY keypad
- Test parameters more easily set
- Additional functions
- Calibration check reminder
- Date and time recorder

#### Micro IRHD Hardness Tester with PC Interface H12/PC

- Same specification as H12/1 plus
- PC interface (RS 232) for data capture to PC
- Data transmitted at the end of the test allowing a PC to collect the results
- Optional X23 software

## Specification:

<b>H12 Micro IRHD Hardness Tester</b>	
Weight	7.5 Kg
Dimensions	214(w) x 255 x (d) x 300mm (h)
Resolution	<0.1 units
Indenter shape	Sphere
Indenter diameter	0.395mm
Full range display	0.3mm
Force method	Weight
Foot Force	235mN
Primary Indenter force	8.3mN
Secondary force	145mN
Force duration	5 + 30 seconds
Minimum sample thickness	1.5mm
Standards	BS ISO 48, DIN 53519, DIN ISO 48, ASTM D 1415

# Hardness: *H14 Macro IRHD Hardness Tester*



The Wallace H14 Hardness Tester allows accurate and repeatable measurements of larger samples.

## Features

- One touch fully automatic operation
- Accurate and consistent results
- Easy access to sample area
- Operator dependency reduced
- Range of sample tables
- Four models offered



The Wallace H14 is a digital, bench-mounted hardness tester designed for measuring in IRHD the hardness of standard rubber samples.

The robust, 'C' frame design allows the operator easy access from front and sides to safely load and remove samples. The indenter mounting is essentially frictionless and its position sensed by a linear variable differential transformer, providing the instrument with outstanding sensitivity. The adjustable anti-vibration feet reduce the effect of external vibration.

By simply pressing the start button, the instrument functions automatically, allowing accurate, repeatable results to be recorded in much less time than traditional models.

As minimal training is required, new operators soon become confident with the H14, achieving consistent readings from the outset.

A range of optional sample tables is available, designed to locate samples of varying shapes and special holding fixtures.

Keys on the front panel easily adjust the measuring head up and down to suit the sample height. Once the start key is pressed, the foot descends to secure the sample, followed by the indenter, which lowers through the centre of the foot with a primary load of 0.3N to find its datum position. After 5 seconds, in line with the testing standards, the force is increased to 5.4N and applied for a further 30 seconds. At this point the instrument identifies the indenter position and the hardness value is automatically frozen and displayed clearly on the LCD screen. Two LEDs on the instrument's front panel monitor all stages of the test cycle.

Four instrument models are offered:

**IRHD Hardness Tester - Basic Model, H14/1**

- Touch button, automatic operation
- Visual LED indication of foot and indenter contact
- Digital display with programmable resolution
- Built-in diagnostics to check instrument's internal settings

**IRHD Hardness tester - Printer Model, H14/2**

- Same specification as H14/1 plus:
- Compact printer with high speed print capability
- 24 character column print output
- Date and time recorder
- Traceability of aborted tests

**IRHD Hardness tester - Data Terminal & Printer Model, H14/3**

- Same specification as H14/2 plus:
- A data input terminal with 16 character two line display and QWERTY keypad
- Test parameters more easily set
- Additional functions
- Calibration check reminder
- Date and time recorder

**IRHD Hardness Tester with PC Interface H14/PC**

- Same specification as H14/1 plus
- PC interface (RS 232) for data capture to PC
- Data transmitted at the end of the test allowing a PC to collect the results
- Optional X23 software

**Specification:**

<b>H14 Macro IRHD Hardness Tester</b>	
Weight	7.5 Kg
Dimensions	214(w) x 255 x (d) x 300mm (h)
Resolution	<0.1 units
Indenter shape	Sphere
Indenter diameter	2.50mm
Full range display	1.8mm
Force method	Weight
Foot Force	8.3N
Primary Indenter force	0.3N
Secondary force	5.4N
Force duration	5 + 30 seconds
Minimum sample thickness	8mm
Standards	BS ISO 48, DIN 53519, ISO 48, ASTM D 1415

# Hardness: *H17 Shore Scale Hardness Tester*

The Wallace H17 series of hardness testers allows accurate measurement of both soft and hard materials using multiple Shore Scales.

## Features

- Tests soft and hard materials using different scales
- One touch fully automatic operation
- Accurate and consistent results
- Easy access to sample area
- Operator dependency reduced
- Range of sample tables
- Four models offered



The Wallace range of H17 digital, bench-mounted hardness testers is designed for measuring in Shore scale the hardness of various materials. Four models are offered – the H17A for testing standard rubber, H17O for soft rubber and medium density textiles, H17D for hard rubbers and plastics and H17M for thin/small rubber samples.

The robust, 'C' frame design allows the operator easy access from front and sides to safely load and remove samples. The adjustable anti-vibration feet reduce the effect of external vibration.

By simply pressing the start button, the instrument functions automatically, allowing accurate, repeatable results to be recorded in much less time than traditional models.

As minimal training is required, new operators soon become confident with the H17, achieving consistent readings from the outset.

A range of optional sample tables is available, designed to locate samples of varying shapes, sizes and special holding fixtures. Keys on the front panel easily adjust the measuring head up and down to suit the sample height.

Once the start key is pressed, the foot descends to secure the sample. In line with the testing standards, once the foot contacts the sample the indentation depth is recorded after a pre set dwell time, typically 3 seconds. At this point the instrument identifies the indenter position and the hardness value is automatically frozen and displayed clearly on the LCD screen.

Four instrument models are offered:

#### Shore Hardness Tester - Basic Model, H17/1

- Touch button, automatic operation
- Visual LED indication of foot and indenter contact
- Digital display with programmable resolution
- Built-in diagnostics to check instrument's internal settings

#### Shore Hardness tester - Printer Model, H17/2

- Same specification as H17/1 plus:
- Compact printer with high speed print capability
- 24 character column print output
- Date and time recorder
- Traceability of aborted tests
- Date and time recorder
- Traceability of aborted tests

#### Shore Hardness tester - Data Terminal & Printer Model, H17/3

- Same specification as H17/2 plus:
- A data input terminal with 16 character two line display and QWERTY keypad
- Test parameters more easily set
- Additional functions
- Calibration check reminder
- Date and time recorder

#### Shore Hardness Tester with PC Interface H17/PC

- Same specification as H17/1 plus
- PC interface (RS 232) for data capture to PC
- Data transmitted at the end of the test allowing a PC to collect the results
- Optional X23 software

## Specification:

<i>Model</i>	<i>H17A</i>	<i>H17D</i>	<i>H17O</i>	<i>H17M</i>
Weight	8.7 Kg	13.7Kg	8.7Kg	8.7Kg
Dimensions	214(w) x 255 x (d) x 300mm (h)	214(w) x 255 x (d) x 360mm (h)	214(w) x 255 x (d) x 300mm (h)	214(w) x 255 x (d) x 300mm (h)
Resolution	0.1 units	0.1 units	0.1 units	0.1 units
Indenter shape	35° Cone (Frustum)	30° Cone	1/2 Spherical	30° Cone
Indenter radius	Flat	0.1mm	1.19mm	0.79mm
Full scale	2.5mm	2.5mm	2.5mm	1.25mm
Force method	Spring	Spring	Spring	Spring
Max. indenter force	8.05N	44.45N	8.05N	0.765N
Force duration	1 or 3 seconds	1 or 3 seconds	1 or 3 seconds	1 or 3 seconds
Minimum sample thickness	6mm	6mm	6mm	1.25mm
Standards	Shore A Scale: BS ISO 7619, DIN 53505, ISO 7619, ASTM D2240, JIS 6301 Shore O Scale: ASTM D2240, Shore D Scale: ASTM S2240, Shore M Scale: ASTM D2240			

# Hardness: Accessories



## X19 Data Input Terminal

*Includes: Data input terminal cable*

The terminal has 16 character by two line display with QWERTY keypad. Parameters can be set more easily and calibration routines performed.



<b>Data Input Terminal</b>	
Weight	800g
Dimensions	40mm (h) x 225mm (w) x 165mm (d)

## X20 Printer

*Includes : Power supply, mains lead, printer , 2 printer paper rolls, printer ribbon and printer cable*

The printer is compact with high speed print capability. It has a 24 character column print output and a date and time recorder.



<b>Printer</b>	
Weight	500g + PSU 200g
Dimensions	95mm (h) x 125mm (w) x 195mm( d)

## X23 Software

*For use with one instrument ( X23/4 for up to four instruments)*

This software allows data to be transmitted from the Hardness tester to a PC and operates as an **Add-in tool for Excel** allowing easy further analysis and manipulation of the data.





## Hardness: *Hardness Test Blocks*

Wallace Rubber Hardness Test Blocks are available in five scales – IRHD (Macro), IRHD (Micro), Shore A, D and M.

### Features:

- Manufactured from specially formulated high-quality rubber
- Resistant to ageing effects of temperature and time on hardness.



The test blocks are for use as a check to ensure instruments are functioning properly and read correctly. They are not intended as standards with specific hardness values. Test blocks should be returned to Wallace every 12 months for re-calibration. The table below lists the test blocks available.

<b>Test Blocks</b>	<b>Scale</b>	<b>Hardness Range (type)</b>	<b>Quantity in Set</b>	<b>Instrument Model</b>
H10	IRHD	40-90	6	H1,H2,H3,H14,H15,H25
H11	IRHD Micro	40-70	4	H5,H5A,H5B,H12
H10A	Shore A	20-90	6	H16A,H17A,H26A
H10D	Shore D	30-80	5	H16D,H17D,H26D
H11M	Shore M	40-70	4	H17M

## Hardness: *Sample Tables*

These sample tables will suit any of the bench- mounted Wallace Hardness Testers, including the H12, H14 and H17 models. The tables accurately locate onto precision dowels, so no extra fixings are required.

### H19/ORO O-ring Holder

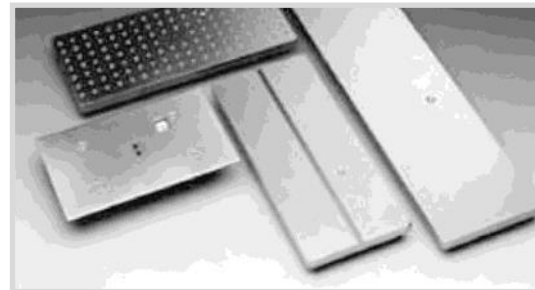
To locate the centre of an O-ring directly beneath the indenter of Wallace Micro Hardness Testers.

Upon turning the knurled wheel, 2 gear driven pins rise from the surface to locate the O-ring. The holder accommodates cross section diameters of between 1 and 5.5mm.



### H19/5 Matrix Table

For precise location of sample holding fixture. Dimensions: 180mm (w) x 76mm (d) The matrix consists of 126 holes located on 10mm centres. Alternate holes are tapped to accept M3 threaded screws or drilled to 3mm to accept a dowel.



### 'V' Groove Tables

For location of solid section extrusions and mouldings.

Dimensions, 180mm (w) x 76mm (d)

H19/2 1mm wide 'V' groove

H19/3 4mm wide 'V' groove

H19/4 8mm wide 'V' Groove

### H19/7 Oversized Table

A flat surface for easy positioning of large samples.

Dimensions: 300mm (w) x 76mm (d)