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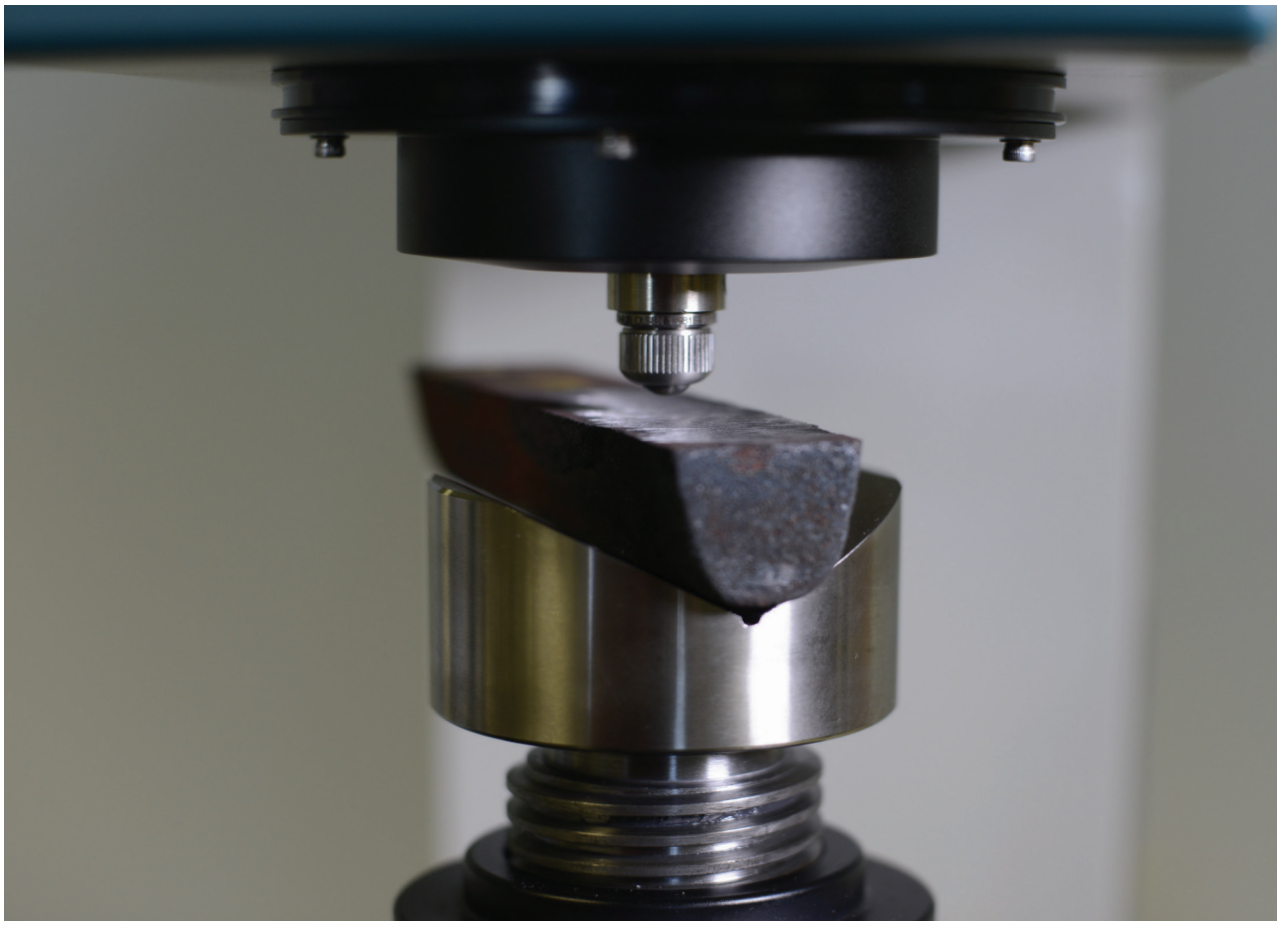
The first name in materials testing

Evotech 4*** Series

Brinell hardness testing system



Features:

- Automatic
- Load cell
- Closed loop
- Advanced force sensor

Test types:

- Brinell
- Brinell with scanner

Brinell systems of Evotech series

Brinell hardness testing is a method used to determine the hardness of materials by measuring their resistance to indentation. This test is particularly useful for materials with a coarse or uneven grain structure, such as castings and forgings, where other hardness tests might not be as effective. Here's a brief overview of the process:

- **Preparation:** The surface of the material is prepared, often by grinding, to remove any inconsistencies that might affect the test results.
- **Indentation:** A hard metal ball, usually made of tungsten carbide, is pressed into the material's surface with a predetermined force (load) for a specific time period.
- **Measurement:** After the indenter is removed, the size of the indentation is measured across at least two diameters, usually at right angles to each other, and the results are averaged.
- **Calculation:** The Brinell hardness number (BHN) is calculated using a formula or determined from a chart based on the average diameter of the indentation.

The test load can vary from 1 kgf to 3000 kgf, with common test forces ranging from 500 kgf for non-ferrous materials to 3000 kgf for steels and cast irons. The diameter of the indenter ball and the depth of the indentation are key factors in calculating the Brinell hardness number. The test is defined in standards such as ASTM E10 and ISO 6506.

Brinell hardness testing machines typically consist of a loading system, an indenter sphere, and a microscope or optical system to measure the indentation. Technological advancements have led to the development of automatic optical Brinell scopes and other systems to reduce measurement errors and operator subjectivity.

Evotech 4010

Evotech 4030

Evotech 4050

Evotech 4060

Model Evotech 4010

The model Evotech 4010 is a quality Brinell testing system in a robust, rigid frame. It integrates a precision optical system with high quality objectives and a digital display and offers conversion to other hardness scales and online statistics, as well as USB, LAN, W-LAN, RS232 data output. The system controls are managed via a simple-to-use 6.5” full color industrial touch screen, which will also display results and statistics.

Features and benefits

- **Load cell, closed loop, force control**
- **Load range 62.5-3000kgf (613N-29kN)**
- **Meets or exceeds ISO, ASTM and JIS standards**
- **6.5” full-color industrial touch screen**
- **Simultaneous conversion to Rockwell, Vickers and Leeb rebound testing**
- **Brinell digital scanner (CCD camera) for automatic indent measurement**
- **Horizon high performance PC-based camera indent measuring system. Automatic measurement of the indent on the industrial touch screen. Archive file, handle images and data on the tester or your network**

STANDARD ACCESSORIES

- 5MP Scanner 1.5-6mm FoV
- RS232, USB, and/or RJ45 connections for data output
- Four adjustable feet
- Power cable
- Certificate of calibration
- Installation and user manual
- Keyboard & Mouse

MODEL DETAILS

EV-032-4010	62.5-3000kgf	Brinell with scanner

Specifications

EV 4010 Specifications	
Item #	EV-032-4010
Hardness scales	Brinell
Load application	Load cell, force feedback, closed loop system
Load range	62.5-3000kgf
Optical system	Brinell digital scanner
Indenters (optional)	2.5, 5, 10mm
Brinell test range	62.5, 80, 100, 120, 125, 187.5, 250, 500, 750, 1000, 1500, 3000kgf
Test cycles	Automatic, loading/dwell/unloading
Standards	complies to or exceeds ISO, ASTM, JIS (Nadcap)
Test for accuracy	<0.5% full range
Display resolution	0.1HB
Hardness conversion	Rockwell, Vickers, Brinell, Leeb and Tensile 2 scales simultaneously
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Memory	Large memory for testing results

EV 4010 Specifications	
Connectivity	USB, RJ45 ethernet, LAN, W-LAN, RS232
Dwell time setting	Default 10 seconds, user defined
Workpiece accommodation	Vertical capacity 220mm Horizontal capacity 220mm (from indenter center-line)
Machine dimensions	180 x 612 x 755mm (WxDxH)
Weight	130kg (287lb)
Operating temp. range	10-35°C (50-95°F) non-condensing
Power consumption	390W
Power supply	100-240V AC, 50Hz/60Hz, single phase
Humidity	10-90%, non-condensing

***Calibration of scales is required prior to use. Please specify desired scales at the time of ordering**

Indent measurement specifications			
Standard 5MP Brinell scanner	FoV 1.5-6mm	On screen magnification - 10x	Measurement resolution - 158pixels/mm
Optional 5MP Brinell scanner	FoV 0.5-1.6mm	On screen magnification - 40x	Measurement resolution - 1066pixels/mm

Model Evotech 4030

The model Evotech 4030 is a fully automatic Brinell testing system in a robust, rigid frame. It is equipped with a 6 position motorized turret, with 3 indenter positions, a laser positioning system and 2 objectives with ring lights and offers conversion to other Hardness scales and online statistics, as well as USB, LAN, W-LAN, RS232 data output. The system controls are managed via a simple-to-use 15" full color industrial touch screen, which will also display results and statistics.

Features and benefits

- **Load cell, closed loop, force control**
- **Load range 31.25-3000kgf (306N-29kN)**
- **Meets or exceeds ISO, ASTM and JIS standards**
- **15" full-color industrial touch screen**
- **CCD camera**
- **Simultaneous conversion to Rockwell, Vickers and Leeb rebound testing**
- **6 position motorized turret; 3 indenters, 2 Brinell objectives with ring lights and 1 laser positioning system**
- **Horizon high performance PC-based camera indent measuring system. Automatic measurement of the indent on the industrial touch screen. Archive file, handle images and data on the tester or your network**

STANDARD ACCESSORIES

- RS232, USB, and/or RJ45 connections for data output
- Four adjustable feet
- Power cable
- Certificate of calibration
- Installation and user manual
- Keyboard & Mouse

MODEL DETAILS

EV-033-4030	31.25-3000kgf	Brinell

Specifications

EV 4030 Specifications	
Item #	EV-033-4030
Hardness scales	Brinell
Load application	Load cell, force feedback, closed loop system
Load range	31.25-3000kgf
Optical system	CCD camera
Indenters (optional)	2.5, 5, 10mm
Brinell test range	31.25, 62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500, 3000kgf
Test cycles	Automatic, loading/dwell/unloading
Standards	complies to or exceeds ISO, ASTM, JIS (Nadcap)
Test for accuracy	<0.5% full range
Display resolution	0.1HB
Hardness conversion	Rockwell, Vickers, Brinell, Leeb and Tensile 2 scales simultaneously

EV 4030 Specifications	
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Memory	Large memory for testing results
Connectivity	USB, RJ45 ethernet, LAN, W-LAN, RS232
Dwell time setting	Default 10 seconds, user defined
Workpiece accommodation	Vertical capacity 365mm Horizontal capacity 230mm (from indenter center-line)
Machine dimensions	180 x 612 x 755mm (WxDxH)
Weight	130kg (287lb)
Operating temp range	10-35°C (50-95°F) non-condensing
Power consumption	390W
Power supply	100-240V AC, 50Hz/60Hz, single phase
Humidity	10-90%, non-condensing

***Calibration of scales is required prior to use. Please specify desired scales at the time of ordering**

Model Evotech 4050

HB

The model Evotech 4050 is a rigid, rock solid C-frame with supreme rigidity. The closed loop system based on a load cell and Rockwell, superficial Rockwell, Brinell, Ball indentation, HVT and HBT scales are part of testing capabilities. The test force ranges from 5kgf to 3,000kgf and test cycles can be automatic or manual. With motorized Z axis and descending test head capable of workpiece detection, it is one of the most loaded technological Hardness tester. 15" industrial touch screen and PC based Horizon software added advantage for this equipment.

Features and benefits

- Load cell, closed loop, force feedback system
- Load range 5-3,000kgf (49N-29kN)
- Meets or exceeds ISO, ASTM and JIS standards
- Motorized Z axis (standard)
- Descending test head with automatic workpiece detection
- PC based Horizon hardness testing firmware and database file system, standard
- Large, adjustable 15" industrial touch screen
- Brinell option: optical - high resolution palm scanner with on screen auto read and fine tune adjustments of indentation
- Testing procedure and results storage on internal hard drive
- LAN, WLAN, USB-2, RS232, printer and DVI connectivity, standard
- On board built-in driver for (optional) motorized XY stage, standard
- Free definable test patterns case depth, traverse, free style, etc, optional
- Raise and lower up to 800kg specimen (standard)

MODEL DETAILS

EV-096-4050	5-3000kgf	Brinell

STANDARD ACCESSORIES

- T-slot testing table 650x500mm
- Single indenter position
- 5MP palm scanner (Brinell)
- Built-in 3 axis support driver
- Power cable
- Four adjustable feet
- Certificate, Installation and user manual
- Keyboard & Mouse

Specifications

EV 4050 specifications	
Item #	EV-096-4050
Hardness scales	Brinell, HBT
Load application	Load cell, force feedback, closed loop system
Load range	5kgf-150kgf
Brinell test scales	HBW1/1, 1/2.5, 1/5, 1/10, 1/30 HBW2.5/6.25, 2.5/15.625, 2.5/31.25, 2.5/62.5, 2.5/187.5 HBW5/25, 5/62.5, 5/125, 5/250 HBW10/100, 10/125, 10/250, 10/500, 10/750, 10/1500, 10/3000
HBD (HBT)	HBT1/5, 1/10, 1/30kgf HBT2.5/6.25, 2.5/15.625, 2.5/31.25, 2.5/62.5, 2.5/187.5kgf HBT5/25, 5/31.25, 5/62.5, 5/125, 5/250kgf HBT10/100, 10/125, 10/250, 10/500, 10/750, 10/1500, 10/3000kgf
Display	15" full color industrial touchscreen, testing results, statistics
Optical system	HD 5MP palm scanner system (Brinell)
Display resolution	1HBW
Standards	Meets or exceeds ISO, ASTM, JIS standards
Test cycles	Motorized, automatic, pre-load, load, dwell, unload process

EV 4050 specifications	
Indenters	Brinell balls: 1mm, 2.5mm, 5mm, 10mm
Dwell time (user defined)	Pre-load 1-250 seconds, Main load 1-250 seconds, Recovery 1-250 seconds
Connectivity	LAN, W-LAN, USB-3, Bluetooth (optional)
Workpiece accommodation	Vertical capacity 650mm; Horizontal capacity 400mm (from indenter center-line)
Machine dimensions	900 x 1010 x 2140 mm (WxDxH)
Weight	1100kg (2425lb)
Test force tolerance	<0.5%
Operating temp. range	5-40°C (41-104°F) non-condensing
Power supply	100-240V AC, 50Hz/60Hz, single phase
Humidity	10-90%, non-condensing

***Calibration of scales is required prior to use. Please specify desired scales at the time of ordering**

Model Evotech 4060

The model Evotech 4060 is a rigid, rock solid C-frame with supreme rigidity. The closed loop system based on a load cell and Rockwell, superficial Rockwell, Brinell, Ball indentation, HVT and HBT scales are part of testing capabilities. The test force ranges from 3kgf to 3,000kgf and test cycles can be automatic or manual. With motorized Z axis and descending test head capable of workpiece detection, it is one of the most loaded technological Hardness tester. 15" industrial touch screen and PC based Horizon software added advantage for this equipment.

Features and benefits

- Load cell, closed loop, force feedback system
- Load range 3-3,000kgf (29N-29kN)
- Meets or exceeds ISO, ASTM and JIS standards
- Motorized Z axis (standard)
- Descending test head with automatic workpiece detection
- PC based Horizon hardness testing firmware and database file system, standard
- Large, adjustable 15" industrial touch screen
- Brinell option: optical - high resolution palm scanner with on screen auto read and fine tune adjustments of indentation
- Testing procedure and results storage on internal hard drive
- LAN, WLAN, USB-2, RS232, printer and DVI connectivity, standard
- On board built-in driver for (optional) motorized XY stage, standard
- Free definable test patterns case depth, traverse, free style, etc, optional
- Raise and lower up to 800kg specimen (standard)

MODEL DETAILS

EV-096-4060	3-3000kgf	Rockwell, Superficial Rockwell, Brinell

STANDARD ACCESSORIES

- T-slot testing table 650x500mm
- Single indenter position
- 5MP palm scanner (Brinell)
- Built-in 3 axis support driver
- Power cable
- Four adjustable feet
- Certificate, Installation and user manual
- Keyboard & Mouse

Specifications

EV 4060 specifications	
Item #	EV-096-4060
Hardness scales	Rockwell, Superficial Rockwell and Brinell, HVT, HBT
Load application	Load cell, force feedback, closed loop system
Load range	3kgf-3,000kgf
Rockwell test scales	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
Superficial Rockwell scales available	15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Brinell test scales (optional)	HBW1/1, 1/2.5, 1/5, 1/10, 1/30 HBW2.5/6.25, 2.5/15.625, 2.5/31.25, 2.5/62.5, 2.5/187.5 HBW5/25, 5/62.5, 5/125, 5/250 HBW10/100, 10/125, 10/250, 10/500, 10/750, 10/1500, 10/3000
HVD (HVT)	HV5, 10, 20, 30, 50, 100, 120
HBD (HBT)	HBT1/5, 1/10, 1/30kgf HBT2.5/6.25, 2.5/15.625, 2.5/31.25, 2.5/62.5, 2.5/187.5kgf HBT5/25, 5/31.25, 5/62.5, 5/125, 5/250kgf HBT10/100, 10/125, 10/250, 10/500, 10/750, 10/1500, 10/3000kgf
Display	15" full color industrial touchscreen, testing results, statistics
Optical system	High definition 5MP palm scanner system (Brinell)
Display resolution	0.01HR, 1HBW
Standards	Meets or exceeds ISO, ASTM, JIS standards
Test cycles	Motorized, automatic, pre-load, load, dwell, unload process

EV 4060 specifications	
Indenters (optional)	Rockwell diamond cone: 120° Rockwell balls: 1/16in, 1/8in, 1/4in, 1/2in Brinell balls: 1mm, 2.5mm, 5mm, 10mm
Dwell time (user defined)	Pre-load 1-250 seconds, Main load 1-250 seconds, Recovery 1-250 seconds
Connectivity	LAN, W-LAN, USB-3, Bluetooth (optional)
Workpiece accommodation	Vertical capacity 650mm; Horizontal capacity 400mm (from indenter center-line)
Machine dimensions	900 x 1010 x 2140 mm (WxDxH)
Weight	1100kg (2425lb)
Test force tolerance	<0.5%
Operating temp.	5-40°C (41-104°F) non-condensing
Power supply	100-240V AC, 50Hz/60Hz, single phase
Humidity	10-90%, non-condensing

*Calibration of scales is required prior to use. Please specify desired scales at the time of ordering

Optional accessories

The models of Evotech Brinell hardness systems have optional accessories in support of different types of tests and/or materials.

Factory options		models
FH-053-0002	Brinell opt: inc: scanner, 5/10mm Brinell scales Ø1.6-6mm (Standard)	EV4050, EV4060
FH-053-0003	Brinell opt: inc: scanner, 1/2.5mm Brinell scales Ø0.5-1.5mm	EV4050, EV4060
FH-053-0009	Industrial dust protection	EV4030

Software modules		models
FH-500-0014	Pattern testing software module	EV4030, EV4060
FH-500-0024	Drawing and measuring (distance & angles) application	EV4030
FH-500-0025	Automatic edge detection	EV4030
FH-500-0030	Q-DAS certified connectivity protocol	EV4030
FH-500-0031	Artificial intelligence deep learning Brinell module	EV4030

Connectivity		models
FH-500-0011	EV-series connection w/ external Horizon	EV4010, EV4030, EV4050, EV4060
FH-500-0031	Artificial intelligence deep learning Brinell module	EV4050, EV4060

Motorized stage		models
FH-049-0017	Motorized 410x280mm XY stage max 4000kg displacement 200x150mm	EV4030, EV4050, EV4060
FH-049-0018	Motorized 510x280mm XY stage max 4000kg displacement 300x150mm	EV4030, EV4050, EV4060
FH-049-0019	Motorized 630x238mm XY stage max 4000kg displacement 400x150mm	EV4030, EV4050, EV4060
FH-049-0027	Cable for motorized stage	EV4050, EV4060
FH-050-0112	Fixture for Jominy testing. 1 quench end test sample with quick release. req: mot stage and FH-500-0014	EV4050, EV4060
FH-050-0113	Fixture for Jominy testing. 3 quench end test sample with quick release. req: mot. stage and FH-500-0014	EV4050, EV4060
FH-050-0334	Stage mounting flange	EV4050, EV4060

Scanners		models
FH-050-0360	Brinell digital scanner II; indenter size 0.5-1.66mm	EV4010
FH-050-0361	Brinell digital scanner I; indenter size 1.5-6mm	EV4010

Fixtures/Vice		models
FH-050-0340	Polished precision vice with lock, opening width 25mm, opens 20mm	EV4030
FH-050-0341	Polished precision vice with lock, opening width 36mm, opens 42mm	EV4030
FH-050-0342	Polished precision vice with lock, opening width 48mm, opens 75mm	EV4030
FH-050-0343	Polished precision vice with lock, opening width 75mm, opens 100mm	EV4030
FH-052-0329	Spring loaded clamping system	EV4010

Cover		models
FH-052-0008	Tester cover 60x70x100cm	EV4030
FH-053-0009	Industrial dust protection	EV4050, EV4060
FH-052-0011	Tester cover 80x115x210cm	EV4050, EV4060

Stage/Anvil		models
FH-006-1008	Small V-Anvil 3-20mm requires base plate(requires manual/automated XY stage)	EV4030
FH-006-1009	Large V-Anvil 20-75mm requires base plate(requires manual/automated XY stage)	EV4030
FH-050-0025	80mm V-Anvil for 3.3-20mm	EV4010, EV4030
FH-050-0026	80mm V-Anvil for 15-80mm	EV4010, EV4030
FH-050-0027	80mm V-Anvil for 20-140mm	EV4010, EV4030
FH-050-0028	Flat test table Ø200mm screwfix	EV4010, EV4030
FH-050-0029	Test table 100x100mm, V-Grove 20mm wide, 10mm deep	EV4010, EV4030
FH-050-0030	450x350mm flat test table w/ 2 T-Slots for large components*	EV4010, EV4030
FH-050-0031	Testing table flat 235mm, screwfix	EV4010, EV4030
FH-050-0034	600x300mm flat test table w/ 2 T-Slots for large components*	EV4010
FH-050-0037	10mm spot anvil	EV4010, EV4030
FH-050-0040	V-Anvil Ø40mm for 6-60mm	EV4010, EV4030
FH-050-0041	Pedestal spot anvil 5mm	EV4010, EV4030
FH-050-0044	Irregular part table support Ø150mm	EV4030
FH-050-0079	Large flat surface testing table 350x250mm, with 2 T-Slots*	EV4010, EV4030
FH-050-0117	Testing table, flat 80mm	EV4010, EV4030
FH-050-0123	V-Anvil Ø120mm for 15-100mm	EV4050, EV4060
FH-050-0124	V-Anvil Ø120mm for 3.3-20mm	EV4050, EV4060
FH-050-0125	V-Anvil Ø120mm for 30-200mm	EV4050, EV4060
FH-050-0126	10mm spot anvil	EV4010, EV4050, EV4060
FH-050-0196	Mounting hardware fit T-Slot table	EV4010
FH-050-0224	Flat test table Ø 650x300x25mm max cap 250kgf	EV4030
FH-050-0238	50mm extension clamp	EV4050, EV4060
FH-050-0239	100mm extension clamp	EV4050, EV4060
FH-050-0266	60mm flat anvil	EV4010, EV4030
FH-050-0324	Cylindrical V-Anvil 6-80mm	EV4010, EV4030
FH-050-0325	Cylindrical V-Anvil 50-200mm	EV4010, EV4030
FH-050-0326	V-Anvil Ø63mm for 10-100mm	EV4010, EV4030
FH-050-0353	V block with bracket 40x40x50mm (LxBxH)	EV4030
FH-050-0354	Steel, cross type, (X) V-block 60x120x100mm 8-90mm pair	EV4030

*Requires FH-050-0196 mounting hardware

Items required for fitment of anvil or XY stage		models
FH-050-0322	Mounting plate for flange	EV4030, EV4050, EV4060
FH-050-0114	Cable set for connecting CNC stage to embedded driver	EV4030
FH-050-0196	Locking ring	EV4010, EV4030

Tables/Cabinets		models
FH-095-1006	Cabinet/table for bench machines 710x750x700mm (grey/black top)	EV4030
FH-095-1008	Cabinet/table for bench machines 710x750x800mm (grey/black top)	EV4010
FH-095-1009	Cabinet/table for bench machines 1500x750x800mm (grey/black top)	EV4010

Optional accessories

Indenters		models
FH-200-1014	Rockwell C Diamond Indenter acc. to ISO 6508/2 & ASTM-E18 A3 (17mm)	EV4060
FH-200-1015	Rockwell Indenter 1/16". Incl: 1 carbide ball ISO 6508/2 & ASTM-E18 A3 (17mm)	EV4060
FH-200-1016	Rockwell Indenter 1/8". Incl: 1 carbide ball ISO 6508/2 & ASTM-E18 A3 (17mm)	EV4060
FH-200-1017	Rockwell Indenter 1/4". Incl: 1 carbide ball ASTM-E18 A3 (17mm)	EV4060
FH-200-1018	Rockwell Indenter 1/2". Incl: 1 carbide ball ASTM-E18 A3 (17mm)	EV4060
FH-200-1019	Brinell Indenter 1mm. Incl: 1 carbide ball ISO 6506/2 & ASTM-E10 A3 (17mm)	EV4050, EV4060
FH-200-1020	Brinell Indenter 2.5mm. Incl: 1 carbide ball. ISO 6506/2 & ASTM-E10 A3 (17mm)	EV4010, EV4030, EV4050, EV4060
FH-200-1021	Brinell Indenter 5mm. Incl: 1 carbide ball ISO 6506/2 & ASTM-E10 A3 (17mm)	EV4010, EV4030, EV4050, EV4060
FH-200-1022	Brinell Indenter 10mm. Incl: 1 carbide ball ISO 6506/2 & ASTM-E10 A3 (17mm)	EV4010, EV4030, EV4050, EV4060
FH-200-1023	1/16" carbide ball acc. to ISO 6508/2 & ASTM-E18 A3	EV4060
FH-200-1024	1/8" carbide ball acc. to ISO 6508/2 & ASTM-E18 A3	EV4060
FH-200-1025	1/4" carbide ball acc. to ISO 6508/2 & ASTM-E18 A3	EV4060

Indenters		models
FH-200-1026	1/2"carbide ball acc. to ISO 6508/2 & ASTM-E18 A3	EV4060
FH-200-1027	1.0mm carbide ball Spare acc. to ISO 6506/2 & ASTM-E10 A3	EV4050, EV4060
FH-200-1028	2.5mm carbide ball Spare acc. to ISO 6506/2 & ASTM-E10 A3	EV4010, EV4030, EV4050, EV4060
FH-200-1029	5.0mm carbide ball Spare acc. to ISO 6506/2 & ASTM-E10 A3	EV4010, EV4030, EV4050, EV4060
FH-200-1030	10.0mm carbide ball Spare acc. to ISO 6506/2 & ASTM-E10 A3	EV4010, EV4030, EV4050, EV4060

Calibration options		models
FH-051-0000	Direct calibration; ISO 17025-A2LA compliant/per scale (factory)	EV4010, EV4030, EV4050,EV4060
FH-051-0002	Additional scales calibration	EV4010, EV4030, EV4050,EV4060
FH-051-0006	BRINELL direct and indirect verification/ calibration & certification in compliance with ISO & ASTM, NADCAP. Includes direct force and indirect verification report (block readings), GR & R report	EV4010, EV4030, EV4050,EV4060
FH-051-0008	Rockwell direct and indirect verification/ calibration & certification in compliance with ISO & ASTM, NADCAP. Includes direct force and indirect verification report (block readings), GR & R report	EV4060

Tinius Olsen

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