

LOAD-CELL TYPE MULTI-VICKERS HARDNESS TESTER FLC-50V



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Cutting Edge of New Technology

◆ Features

◆ The load cell type loading mechanism is adopted.

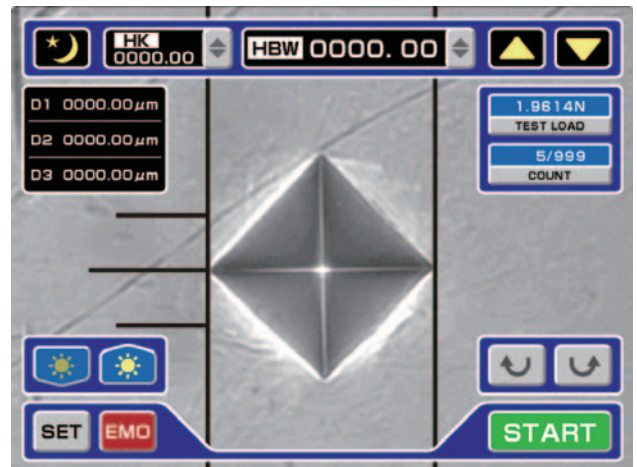
- The ultra-wide range of 50g to 50kg has been realized. One unit can cover the very wide range from the "micro" to the "macro".
- The precise CPU feedback control system stabilizes the test load accuracy.
- The test load can be optionally set by "Unit: 1g".

◆ The liquid crystal touch pad display is adopted.

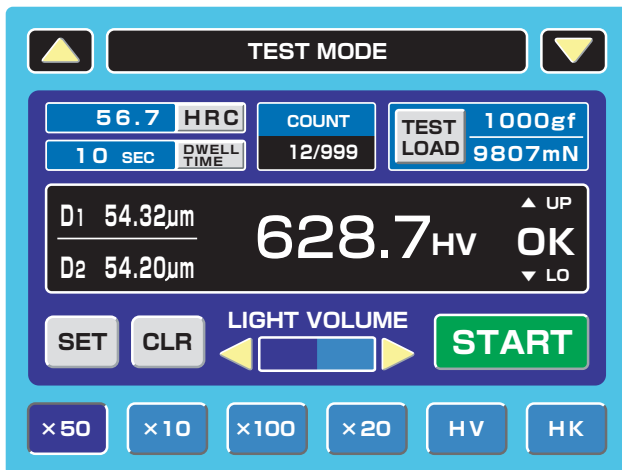
- Visibility is excellent. The display screen is bright and clear.
- This display can also be used as the TV monitor by adding the CCD camera.

◆ Multi-Function for Hardness Testing

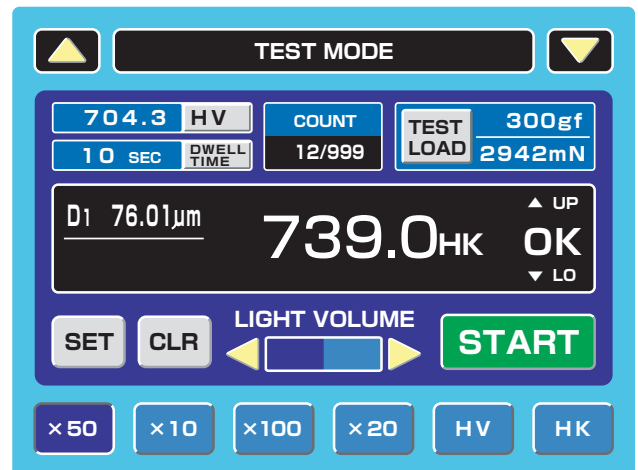
- FLC Series can perform Vickers / Knoop / Brinell and Fracture Toughness Test.



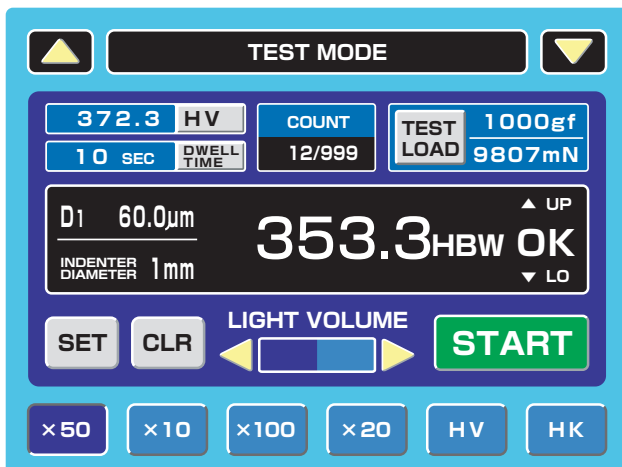
Monitor measuring mode



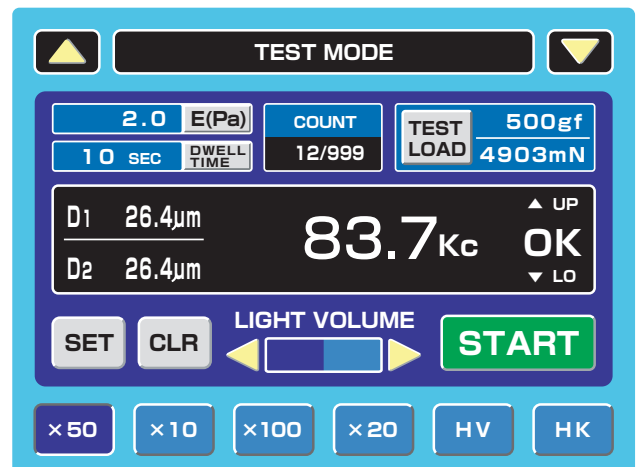
HV : VICKERS HARDNESS TEST



HK : KNOOP HARDNESS TEST

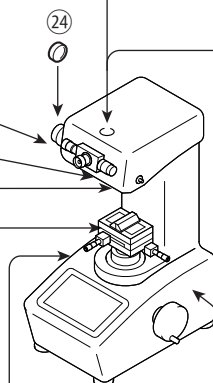
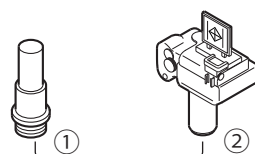
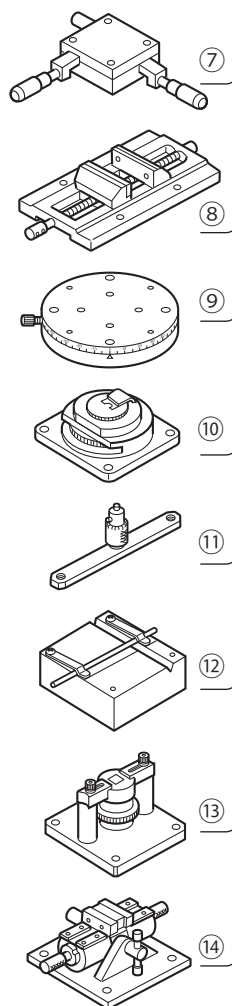
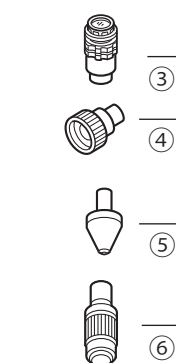


HBW : BRINELL HARDNESS TEST



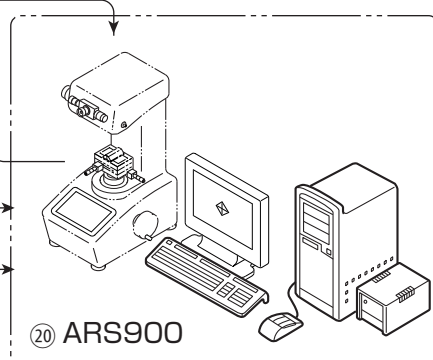
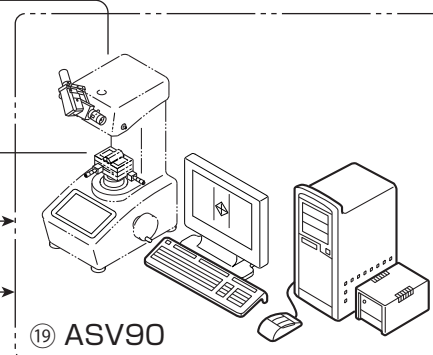
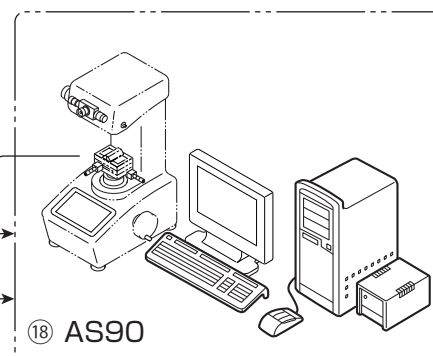
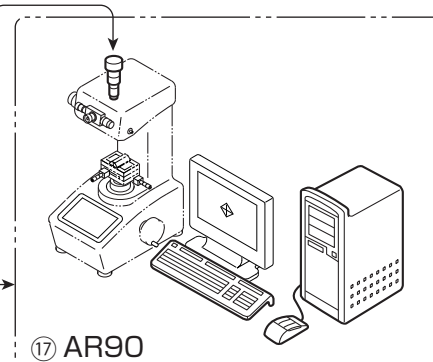
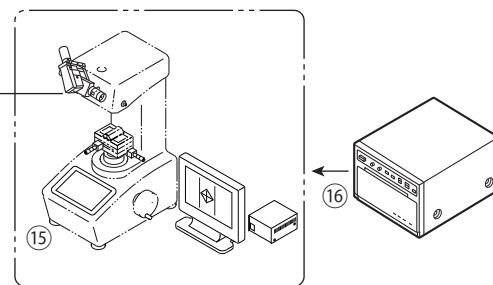
Kc : FRACTURE TOUGHNESS TEST

SYSTEM CHART <OPTIONAL COMPONENTS>



Any Models
on a Market

Any Models
on a Market



OPTIONAL ACCESSORIES

CODE NO.	ITEM		DESCRIPTION
LV-014	KNOOP INDENTER ⑤		Rhombic diamond indenter for Knoop hardness
LV-041	HARDNESS CALCULATION TABLE	FOR HV	Standard for FV-100 Series and optional for FV-300 & FV-700 Series
LV-042		FOR HK	Optional for all models
LV-015	OBJECT LENS ③		X 100
LV-061			X 50
LV-016			X 40
LV-017			X 20 (Standard for Type B)
LV-019			X 5
LV-062	EYEPIECE ④		X 15
LV-022	COLOR FILTER ②④		φ 20 mm : Yellow or Blue (Standard : Green)
LV-023	COLOR TEMPERATURE CONVERSION FILTER		For color TV measuring device
LV-055	CAMERA MOUNTING TUBE ①		For adapting photographic camera & CCD camera
LV-010	DIGITAL CAMERA ATTACHMENT ②		C MOUNT ATTACHMENT (Digital camera is not included)
LV-008	TV MEASURING DEVICE	Black & White ⑮	B & W CCD camera + 8.4" LCD (8.4-inch monitor is not necessary when using the monitor measuring mode)
LV-009		Color	Color CCD camera + 14" CRT Monitor
LV-003	AUTOMATIC READING SYSTEM <AR90> ⑰		After focusing, tow diagonal lengths of indent will be measured and displayed automatically in a moment. Measurement time : Approx. 0.3 sec / 1 indent Components : CCD camera (B & W) + PC + Printer + AR90 Software
LV-002 / LV-002A	AUTOMATIC X-Y STAGE & CONTROL UNIT <AS90> ⑱		Automatic : Max. movement : Standard : 50 mm / Option : 100 mm X-Y stage Min. micro inching : 1 μm Dimensions : Standard : 110 x 110 mm / Option : 160 x 160 mm Components : Auto-stage + Motor drive unit + PC + Printer + AS90 Software
LV-000 / LV-000A	SEMI-AUTOMATIC MEASURING SYSTEM WITH AUTO-STAGE <ASV90> ⑲		The combined system of AS and CCD camera. Operator can measure the indentation manually on the CRT by using two measuring lines. Components : Auto-stage + Motor drive unit + CCD camera (B & W) + PC + Printer + ASV90 Software
LV-001 / LV-001A	AUTOMATIC MEASURING SYSTEM WITH AUTO-STAGE <ARS900> ⑳		The combined system of AR and AS Components : Auto-stage + Motor drive unit + CCD camera (B & W) + PC + Printer + ARS900 Software
LV-038	MANUAL X-Y STAGE ㉑		Max. movement : (X) 50 mm x (Y) 50 mm
LV-028	PRECISION VISE ㉒		Max. opening : 100 mm
LV-029	ROTARY TABLE ㉓		Graduation of rotary angle : 5 degree Table diameter : φ 128 mm
LV-030	THIN SPECIMEN MEASURING DEVICE ㉔		Specimen thickness : 5 mm max.
LV-031	FINE SPECIMEN MEASURING DEVICE	VERTICAL TYPE ㉕	Specimen diameter : φ 5 mm max. (For measuring the cross section)
LV-032		HORIZONTAL TYPE ㉖	Specimen diameter : φ 5 mm max. (For measuring the cylindrical surface)
LV-033	SPECIMEN INCLINING DEVICE ㉗		Specimen height : 5 ~ 20 mm (For mounted specimen)
LV-034	UNIVERSAL INCLINING VISE ㉘		Inclining device + Vise Max. opening : 45 mm
LV-004	DIGITAL PRINTER	㉙	RS232C type (For Hardness Tester)
		㉚	Bubble Jet type (For Automatic System)
LV-006	LASER PRINTER ㉛		Any models on a market (For Automatic System)
LV-007	VIDEO GRAPHIC PRINTER ㉜		By SONY or MITSUBISHI (For TV measuring System)
LV-063~066	TUNGSTEN CARBIDE BALL INDENTER ㉝		φ 1, 2.5, 5 mm
LV-058	MECHANICAL PARTS FOR ADDITIONAL OBJECT LENS ㉞		Mechanical parts on turret for additional third and fourth object lens. Additional lenses should be specified when placing order. Possible to install additional lenses only in our factory.
LV-079	DUAL INDENTER TURRET (For FV-700 Series) ㉟		Specially designed turret could be available for adapting two indenters (HV+HK) simultaneously. Impossible to change a Single Indenter Turret to Dual Indenter Turret at customer's site. Please indicate when ordering.

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■ SPECIFICATIONS

ITEM		SPECIFICATIONS								
MODEL		FLC-50V / MACRO VICKERS								
DISPLAY & OPERATION PANEL		8.4" TFT Full-Color LCD Touch Panel Display (NEC: NL644BBC26-01)								
AVAILABLE LANGUAGES		Japanese / English / German / French / Italian / Spanish / Polish / Chinese / Korean								
AVAILABLE TEST METHOD [APPLICABLE STANDARDS]	VICKERS	JIS B-7725, JIS Z-2244, ASTM E-92, ASTM E-384, and ISO 6507-2								
	KNOOP	ISO 4545 and ISO 4546								
	BRINELL	JIS B-7726, ASTM E-10, and ISO 6506								
	K _{1c} & K _c (FRACTURE TUGHNESS)	JIS R-1607 JIS R-1610 / SEPB Method & IF Method								
TEST LOAD	VICKERS	N :0.4903 0.9807 1.9614 2.942 4.903 9.807 19.61 29.42 49.03 98.07 196.1 294.2 490.3								
		kgf :0.05 0.1 0.2 0.3 0.5 1 2 3 5 10 20 30 50								
	KNOOP	N :0.4903 0.9807 1.9614 2.942 4.903 9.807 19.61 29.42 49.03 98.07 196.1 294.2 490.3								
		kgf :0.05 0.1 0.2 0.3 0.5 1 2 3 5 10 20 30 50								
	BRINELL	N : 1/9.807 1/24.52 1/49.03 1/98.07 1/294.2 2/39.23 2/98.07 2/196.1 2/392.3 2.5/61.29 2.5/153.2 2.5/306.5 kgf : 1/1 1/2.5 1/5 1/10 1/30 2/4 2/10 2/20 2/40 2.5/6.25 2.5/15.625 2.5/31.25								
	FLEXIBLE LOAD SETTING	0.4903N (50gf) ~ 490.3N (50kgf) 0.0098N (1gf) ~ 490.3N (50kgf)								
	LOADING PRINCIPLE		Full-Automatic Direct Loading Method with Load-Cell Feedback							
	LOAD-CELL TYPE		2 Steps Automatic Changing System : 50gf~2kgf / 2kgf~50kgf							
LOAD APPLYING SPEED		★ Initial Loading Speed : 260μm/sec ★ Actual Loading Speed : 5~120μm/sec * Each speed is variable.								
DWELL TIME		5 ~ 99 sec								
INDENTER	STANDARD	Vickers Indenter (HV)								
	OPTION	Knoop Indenter (HK) / Brinell Ball Indenter (HBW Φ1mm, Φ2mm, Φ2.5mm)								
OBJECTIVE	STANDARD	Definitive System / 2 Lenses : X10 & X50 ** Long Working Distance Lens is available as OPTION.								
	OPTION	Definitive System / Max. 4 Lenses (Standard Lens plus 2) : X5, X20, X40 or X100								
EYEPIECE	STANDARD	X10								
TOTAL	STANDARD	X100 & X500								
MAGNIFICATION	OPTION	X50, X200, X400 or X1000								
MEASURING MICROSCOPE	TYPE	Electronic Type								
	MAX. MEASUREMENT LENGTH	170μm (with X500) / 850μm (with X100)								
	MIN. GRADUATION	Digital : 0.01μm (with X500)								
	MIN. MEASUREMENT UNIT	Digital : 0.01μm (with X500)								
X-Y STAGE	TYPE	Manual								
	DIMENSIONS	100 x 100mm								
	MAX. MOVEMENT	(X) 25 x (Y) 25mm								
	MIN. MICRO GRADUATION	1/100mm ** Digital Micrometer Head (1/1000mm) is available as OPTION. (Display the Coordinates of Test Point.)								
PRECISION VISE	MAX. OPENING	50mm								
MAX. HEIGHT OF SPECIMEN		160mm								
MAX. DEPTH OF SPECIMEN		200mm								
HARDNESS CONVERSION		Available ASTM E-14, ASTM A-370, DIN 50150, and SAE (J-417b)								
OPERATION PANEL		TEST MODE SCREEN : START / RESET / DWELL TIME / LIGHT UP-DOWN / TEST LOAD / CONVERSION SCALE / TURRET ROTATION / CLEAR								
DATA DISPLAY (8.4" TFT FULL-COLOR LCD TOUCH PANEL)		HARDNESS TEST MODE SCREEN : D1 / D2/ HV-HK-HB-MT115 / HARDNESS VALUE / CONVERSION DATA / OK-NG / TEST TIMES OPTION : INDENTATION PROFILE (with CCD Camera) / COORDINATES OF TEST POINT								
DATA OUTPUT & COMMUNICATION SIGNAL		RS232C & USB / OPTION : P.I.O. (For External Control)								
HARDNESS DATA PRINTOUT MODE		RS232C : D1 / D2 / HV-HK-HB-MT115 /HARDNESS VALUE /TEST LOAD / OK-NG / CONVERSION SCALE / CONVERSION DATA / STATISTIC DATA / etc.								
HARDNESS DATA EDITING		DATA EDITING / STATISTIC DATA [TEST TIMES - MAX. - MIN. - MEAN - RANGE - STANDARD DEVIATION - DISPERSION - COEFFICIENT OF VARIATION] / GRAPH & CHART DISPLAY / HISTOGRAM DISPLAY								
OK/NG CRITERIA		Upper & Lower Limit Setting and OK-NG Display								
SELF DIAGNOSIS		Detail Trouble Display of Motors & Switches								
LIGHT SOURCE BULB		Incandescent Lamp : 6V / 18W (Auto-Iris Function)								
OPTICAL FUNCTIONAL PARTS		Aperture Diaphragm & Field Aperture : Adjustable / Colore Filter : Replaceable								
ACCURACY		VICKERS HARDNESS TEST : Conform to JIS B-7725, JIS B-7734, ASTM E-92, ASTM E-384, and ISO 6507-2								
PHOTOGRAPHIC DEVICE		Capable to mount. (at anytime on Top of the Machine.) (Camera : OPTION)								
DIMENSIONS		(W) 280 x (D) 640 x (H) 651 mm								
WEIGHT		Approx. 120kg (Including Standard Accessories.)								
POWER SUPPLY		1P / AC100V, AC115V, AC220V, AC240V (Set when shipped from factory) 50/60Hz (Changeable by External Switch.)								

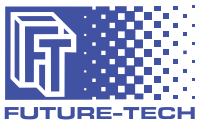
STANDARD ACCESSORIES

CODE NO.	ITEM / SPECIFICATIONS		FLC-50V
LV-026	MANUAL X-Y STAGE	25 x 25mm	1
LV-027	PRECISION VISE	Max. Opening : 50mm	1
LV-039	HARDNESS STANDARD BLOCK	700HV	1
LV-013	DIAMOND INDENTER (BUILT-IN)	For Vickers (HV)	1
LV-041	MEASURING MICROSCOPE (WITH ×10 EYEPIECE)	Electronic Type	1
LV-061	OBJECT LENS (BUILT-IN)	×50	1
LV-018		×10	1
LV-052	LEVEL ADJUSTING LEG		4
LV-053	INDENTER COVER (BUILT-IN)	(For Transportation)	1
LV-044	SPARE LIGHT BULB	6V/18W	2
LV-054	CAMERA MOUNTING TUBE	For CCD Camera	1
LV-056	MACHINE COVER		1
LV-051	POWER CORD		1
	AUXILIARY TOOLS	Screw Driver, Wrench, etc.	1
LV-057	ACCESSORY BOX		1
	INSTRUCTION & MAINTENANCE MANUAL		1



Monitor measuring system

※ Appearance and specifications are subject to change without prior notice for the product improvement.



FUTURE-TECH CORP.

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