

■ SPECIFICATIONS

ITEM	SPECIFICATIONS
MODEL	<b>FLC-50V / MACRO VICKERS</b>
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 KNOOP BRINELL
	JIS B-7725, JIS Z-2244, ASTM E-92, ASTM E-384, and ISO 6507-2 ISO 4545 and ISO 4546 JIS B-7726, ASTM E-10, and ISO 6506
TEST LOAD	K <sub>1c</sub> & K <sub>c</sub> ( FRACTURE TOUGHNESS )
	JIS R-1607 JIS R-1610 / SEPB Method & IF Method
	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
TEST LOAD	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
TEST LOAD	N: 1/9.807 1/24.52 1/49.03 1/98.07 1/294.2 2/392.3 2/980.7 2/196.1 2/392.3 2.5/61.29 2.5/153.2 2.5/306.5 (OPTION: 2.5/612.9) 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 (OPTION: 2.5/62.5)
	0.4903N (50gf) ~ 490.3N (50kgf) 0.0098N (1gf) ~ 490.3N (50kgf)
	FLEXIBLE LOAD SETTING
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 : 260 μm/sec ★ Actual Loading Speed : 5~120 μm/sec * Each speed is variable.
DWELL TIME	5 ~ 99 sec
INDENTER	STANDARD
	Vickers Indenter ( HV ) 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. Definitive System / Max. 4 Lenses ( Standard Lens plus 2 ) : X5, X20, X40 or X100
EYEPIECE	STANDARD
TOTAL MAGNIFICATION	STANDARD
MEASURING MICROSCOPE	TYPE
	MAX. MEASUREMENT LENGTH
	MIN. GRADUATION
X-Y STAGE	TYPE
	DIMENSIONS
	MAX. MOVEMENT
PRECISION VISE	MAX. OPENING
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	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/DIS 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
LV-027	PRECISION VISE	Max. Opening : 50mm
LV-039	HARDNESS STANDARD BLOCK	700HV
LV-013	DIAMOND INDENTER ( BUILT-IN )	For Vickers ( HV )
LV-041	MEASURING MICROSCOPE ( WITH X10 EYEPIECE )	Electronic Type
LV-061	OBJECT LENS ( BUILT-IN )	x50
LV-018		x10
LV-052	LEVEL ADJUSTING LEG	4
LV-053	INDENTER COVER ( BUILT-IN )	( For Transportation )
LV-044	SPARE LIGHT BULB	6V/18W
LV-054	CAMERA MOUNTING TUBE	For CCD Camera
LV-056	MACHINE COVER	1
LV-051	POWER CORD	1
	AUXILIARY TOOLS	Screw Driver, Wrench, etc.
LV-057	ACCESSORY BOX	1
	INSTRUCTION & MAINTENANCE MANUAL	1



Monitor measuring system

\* Appearance and specifications are subject to change without prior notice.



**FUTURE-TECH CORP.**

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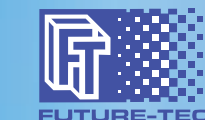
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Agent :

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



**FUTURE-TECH CORP.**



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

## Cutting Edge of New Technology

### ◆ Features

#### ◆ The load cell type loading mechanism is adopted.

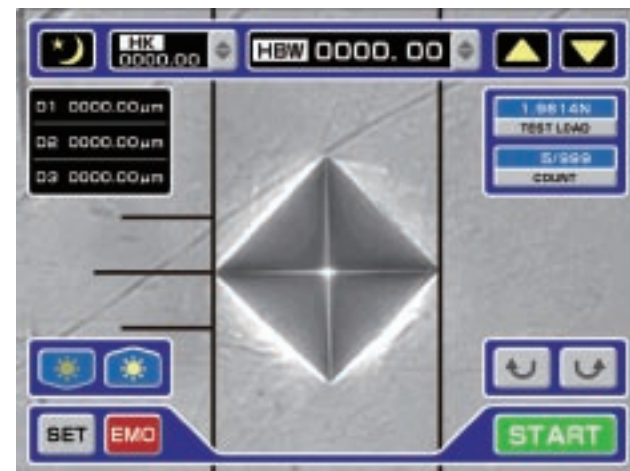
- The ultra-wide range of 50g to 50kg has been realized. One unit can cover the very wide range from the "micro" to the "macro".
- The precise CPU feedback control system stabilizes the test load accuracy.
- The test load can be optionally set by "Unit: 1g".

#### ◆ The liquid crystal touch pad display is adopted.

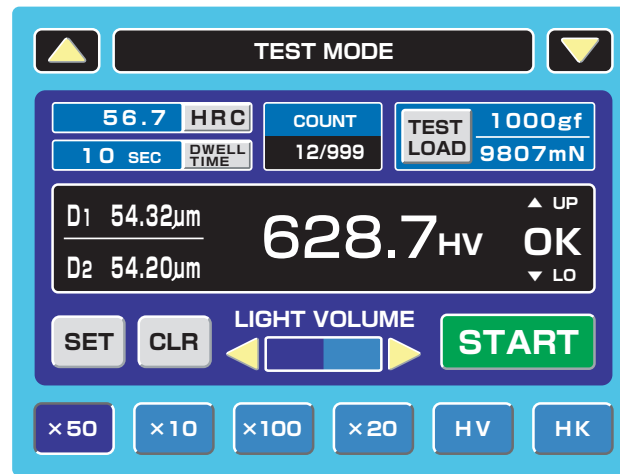
- Visibility is excellent. The display screen is bright and clear.
- This display can also be used as the TV monitor by adding the CCD camera.

#### ◆ Multi-Function for Hardness Testing

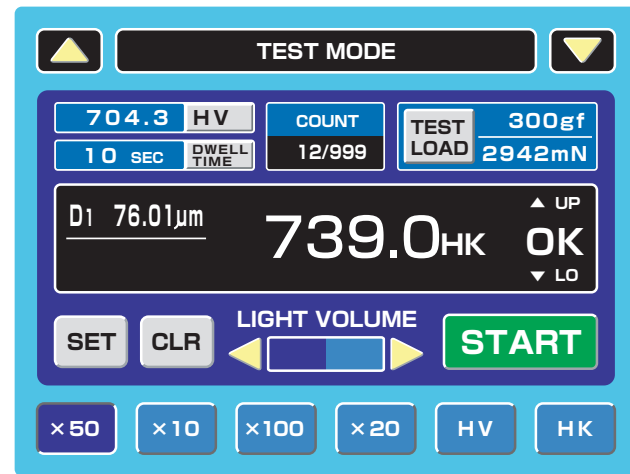
- FLC Series can perform Vickers / Knoop / Brinell and Fracture Toughness Test.



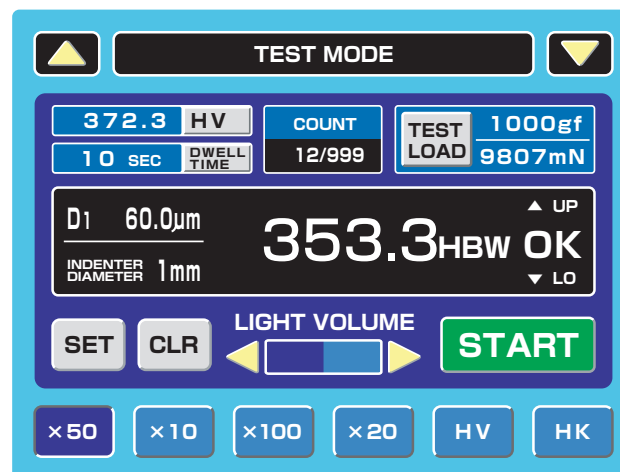
Monitor measuring mode



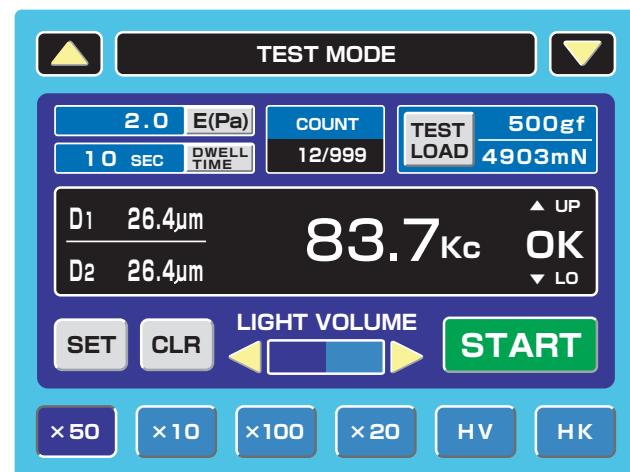
HV : VICKERS HARDNESS TEST



HK : KNOOP HARDNESS TEST

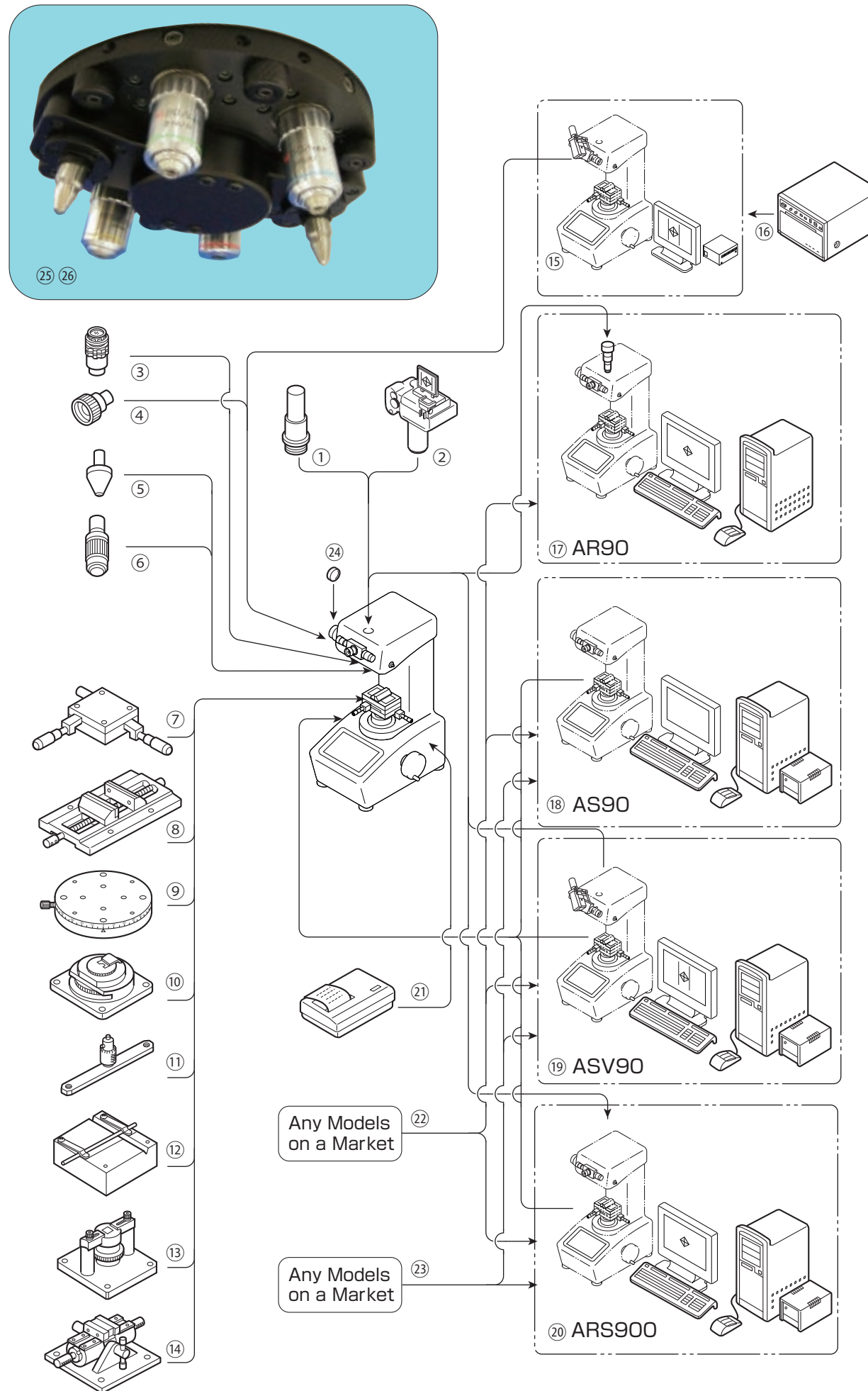


HBW : BRINELL HARDNESS TEST



Kc : FRACTURE TOUGHNESS TEST

### SYSTEM CHART <OPTIONAL COMPONENTS>



### 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	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	④ φ 20 mm : Yellow or Blue (Standard : Green)
LV-023	COLOR TEMPERATURE CONVERSION FILTER	④ 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 ⑤ B & W CCD camera + 8.4" LCD ( 8.4-inch monitor is not necessary when using the monitor measuring mode )
LV-009		Color ⑤ Color CCD camera + 14" CRT Monitor
LV-003	AUTOMATIC READING SYSTEM <AR90>	⑩ After focusing, two 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>	⑩ 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>	⑩ 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>	⑩ 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	⑦ Max. movement : ( X ) 50 mm x ( Y ) 50 mm
LV-028	PRECISION VISE	⑧ Max. opening : 100 mm
LV-029	ROTARY TABLE	⑨ Graduation of rotary angle : 5 degree Table diameter : φ 128 mm
LV-030	THIN SPECIMEN MEASURING DEVICE	⑩ Specimen thickness : 5 mm max.
LV-031	FINE SPECIMEN MEASURING DEVICE	VERTICAL TYPE ⑪ Specimen diameter : φ 5 mm max. (For measuring the cross section)
LV-032		HORIZONTAL TYPE ⑫ Specimen diameter : φ 5 mm max. (For measuring the cylindrical surface)
LV-033	SPECIMEN INCLINING DEVICE	⑬ Specimen height : 5 ~ 20 mm (For mounted specimen)
LV-034	UNIVERSAL INCLINING VISE	⑭ Inclining device + Vise Max. opening : 45 mm
LV-004	DIGITAL PRINTER	⑪ RS232C type (For Hardness Tester)
		⑫ Bubble Jet type (For Automatic System)
LV-006	LASER PRINTER	⑫ Any models on a market (For Automatic System)
LV-007	VIDEO GRAPHIC PRINTER	⑫ By SONY or MITSUBISHI (For TV measuring System)
LV-063~066	TUNGSTEN CARBIDE BALL INDENTER	⑥ φ 1, 2.5, 5 mm
LV-058	MECHANICAL PARTS FOR ADDITIONAL OBJECT LENS	⑫ 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)	⑫ 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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