

DIGITAL ROCKWELL TYPE HARDNESS TESTER

FR-e Series



〈FR-3e〉

DIGITAL ROCKWELL HARDNESS TESTER

FR-e Series

— **FR-1e, FR-2e, FR-3e** —
— **FR-1eL, FR-2eL, FR-3eL** —

**HIGH ACCURACY & RELIABILITY ATTAINED
BY ADVANCED PRODUCTION TECHNOLOGY**

————— **New design in focus “Usefulness and Wide Selection”** —————

OUTSTANDING FEATURES

HARDNESS CONVERSION

Hardness conversion for many scales are displayed on the panel in compliance with SAE (J-417b) and ASTM (E-18).

OK/NG CRITERIA

Capable to set upper and lower limits and OK/NG display.

PLASTIC MEASUREMENT MODE AS STANDARD FUNCTION

Specific measuring method for plastics in compliance with ASTM and JIS is activated by one-touch easy operation.

STEADY LOAD SPINDLE MECHANISM

Two ball guides are adapted on upper and lower parts of special load spindle. It brings constant and accurate measurement on cylindrical and spherical surface.

EASY "ZERO" SETTING WITH LEVEL METER AND ELECTRONIC SOUND

The minor load can be set easily without watching the digital display by means of the LED level meter and electronic sound.

AUTOMATIC START LOADING

In "AUTO" measuring mode test load is automatically applied once the minor load has been set (290.0 to 299.9 on the digital display). Automatic load application does not start if the minor load exceeds the range (over 300.0 on the digital display). Manual start is also capable.

RS-232C OUTPUT AS STANDARD

In addition to CENTRONICS output, RS232C output for computer or printer is available as standard.

USER FRIENDLY OPERATION PANEL

All test conditions like as measuring scale, dwell time, conversion scale, etc can be set on the durable front membrane sheet panel. It is really easy operation.



〈FR-e/FR-eL/FR-AT〉 DISPLAY & OPERATION PANEL

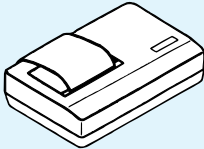
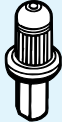
SPECIFICATIONS

ITEM		FR-1e	FR-1eL	FR-2e	FR-2eL	FR-3e	FR-3eL
TYPE		Digital / Motorized					
LOAD	MINOR LOAD	N : 98.07 kgf : 10		N : 29.42 kgf : 3		N : 29.42 & 98.07 kgf : 3 & 10	
	TEST LOAD	N : 588.4 980.7 1471 kgf : 60 100 150		N : 147.1 294.2 441.3 kgf : 15 30 45		N : 147.1 294.2 441.3 kgf : 15 30 45 N : 588.4 980.7 1471 kgf : 60 100 150	
		Dial changing					
MINOR LOAD POSITION SETTING		Automatic setting (LED level meter & electronic sound monitoring : Fine adjustment is unnecessary.)					
LOAD CONTROL		Automatic (Application-holding-release)					
START OPERATION		Automatic start / Manual start selection					
LOADING SPEED		Approx. 2 sec (fixed)					
DWELL TIME		1-99 sec (Key entry in unit of 1 sec / Factory setting : 5 sec)					
PLASTIC MEASUREMENT MODE		Standard function (one-touch selection) Time up to hardness value display after release of test load : 1 to 99 sec					
HARDNESS CONVERSION		Capable in compliance with SAE (J-417b) & ASTM (E-18).					
OK / NG CRITERIA		Upper and lower limit setting, and OK / NG display (HR 0 to 130, min. 0.1 hardness setting)					
SCALE DISPLAY		C, D, A, G, B, F, K, E, H, P, M, L, V, S, R		15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y		C, D, A, G, B, F, K, E, H, P, M, L, V, S, R, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y	
OUTPUT SIGNAL		RS232C (Baud rate : 9,600 bps) & CENTRONICS					
RS-232C OUTPUT & PRINTOUT MODE		① Measurement data only ② Measurement data and evaluation results (Max. value, min. value & OK / NG) ③ Measurement data and conversion data ④ Measurement data, conversion data and evaluation results (Max. value, min. value & OK / NG)					
ACCURACY		Conform to JIS B-7726					
MAX. SPECIMEN HEIGHT		190 mm	295 mm	190 mm	295 mm	155 mm	260 mm
MAX. SPECIMEN DEPTH		155 mm					
DIMENSIONS		FR-e: W190 x D443 x H675mm / FR-eL: W190 x D443 x H 780 mm					
WEIGHT		75kg	80 kg	73 kg	78 kg	75 kg	80 kg
POWER SUPPLY		Single phase AC 100V, 50 / 60HZ in Japan and AC 100 ~240V, 50 / 60HZ available for Export Model.					

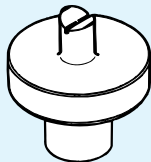
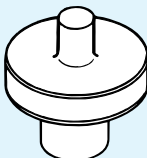
STANDARD ACCESSORIES

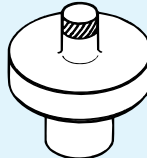
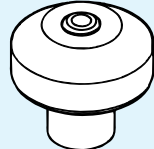
CODE No.	ITEM		FR-1e	FR-1eL	FR-2e	FR-2eL	FR-3e	FR-3eL
R-012	HARDNESS STANDARD BLOCK	HRC	1	—	—	—	1	—
R-014		HRB	1	—	—	—	1	—
R-015		HR30N	—	—	1	—	1	—
R-016		HR30T	—	—	1	—	1	—
R-002	DIAMOND INDENTER	For ROCKWELL Type	1	—	—	—	—	—
R-003		For SUPERFICIAL & TWIN Type	—	—	1	—	1	—
R-004	STEEL BALL INDENTER (φ 1/16" / φ 1.588mm)		1	—	1	—	1	—
R-008	SPARE STEEL BALL (φ 1/16" / φ 1.588mm)		10	—	10	—	10	—
R-021	ANVIL	FLAT (φ 60mm)	1	—	1	—	1	—
R-022		V-SHAPE (LARGE)	1	—	1	—	1	—
R-042	POWER CABLE (3P-2.5mm)		1	—	1	—	1	—
R-043	LEVEL ADJUSTING LEG		4	—	4	—	4	—
R-044	MACHINE COVER		1	—	1	—	1	—
	INSTRUCTION AND MAINTENANCE MANUAL		1	—	1	—	1	—
R-045	ACCESSORY BOX		1	—	1	—	1	—

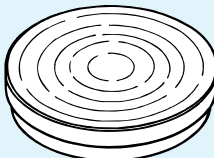
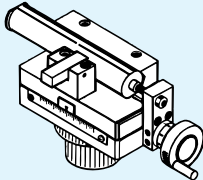
OPTIONAL ACCESSORIES

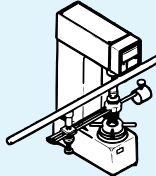
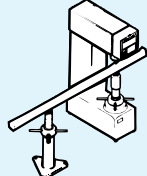
CODE No.	ITEM	CODE No.	ITEM
R-001	DIGITAL PRINTER	R-005	STEEL BALL INDENTER: $\phi 1/8"$
			

R-006	STEEL BALL INDENTER: $\phi 1/4"$	R-007	STEEL BALL INDENTER: $\phi 1/2"$
			

R-023	ANVIL : V-SHAPE (Small)	R-025	ANVIL : SPOT
			

R-026	ANVIL : CARBIDE SPOT	R-027	ANVIL : DIAMOND SPOT
			

R-028	ROUND TABLE : $\phi 200$ mm	R-029	MICRO TEST TABLE FOR JOMINY TEST
			

R-030	LONG SPECIMEN TESTING JIG : VARI-REST	R-031	LONG SPECIMEN TESTING JIG : JACK-REST
			



<FM-800>
Digital Microhardness Tester



<FV-800>
Digital Vickers Hardness Tester



<FM-ARS 9000>
Full-Automatic Microhardness Testing System

※ Appearance and specifications are subject to change without prior notice.



We are based on JIS Q 17025 (ISO/IEC 17025) as accredited standards, and accredited by JCSS who manages the recognition scheme according to ISO/IEC 17011.
IA Japan (accreditation organization who has managed JCSS) who is signatory to the Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Laboratory Accreditation Cooperation (APLAC).
We are accredited as MRA Calibration Laboratory of JCSS. Our accreditation number is JCSS 0228.



FUTURE-TECH CORP.

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