

# HR-521(L) / 523(L)

## SERIES 810 — Rockwell Type Hardness Testing Machines

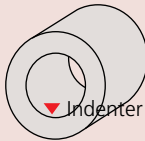
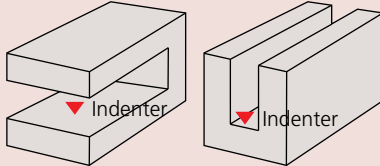
### Technical Data

Preliminary test force:	29.42N, 98.07N
Test force	
Rockwell superficial:	147.1, 294.2, 441.3N
Rockwell:	588.4, 980.7, 1471N
Brinell*:	
Test force setting:	By control unit
Load control:	Automatic (loading, duration, unloading)
Load duration:	0s - 120s (1s increments)
Max. specimen height:	205mm (for standard flat anvil)
Max. specimen depth:	150mm (from the center of indenter shaft)
Stage elevation:	Manual or power drive
Control unit:	Sheet-switch type or touch-screen type
Data output:	RS-232C, Digimatic code (SPC) and Centronics
Power supply:	120V AC, 50/60Hz
Dimensions (W x D x H)	
Main unit:	250 x 670 x 605mm
Control unit:	165 x 260 x 105mm

**Optional Accessories:** See page K-11, 12

**Various shapes of specimen can be measured. (Nose-type indenter axis mechanism has been adopted.)**

The nose-type indenter mechanism allows measurement of pipe samples as well as the top surface of a flat sample.



### Function: Touch-screen type

- Touch-screen operation with a back-lit LCD graphic display.
- Remote selection of the test force linked to the hardness scale selection.
- Choice of message language in English, German, French, Spanish, Italian and Japanese.
- Cylindrical and spherical surface compensation.
- Data offset.
- Conversion to other hardness scales.
- Powerful statistical processing with flexible data point editing and 1024 data memory.
- Measured data editing
- Go/no-go tolerance judgment.
- Statistical processing, histogram and  $\bar{x}$ -R chart

### FEATURES

- Multiple test force generation for Rockwell, Rockwell Superficial and Light Force Brinell hardness.
- Dolphin-nose indenter arm for easy reach of interior (min.  $\varnothing 40\text{mm}/\varnothing 22\text{mm}^*$ ) and exterior surfaces.  
\*When using an optional diamond indenter (19BA292).
- Real-time electronic test force control for accurate loading. This eliminates load force overshooting.
- Indenter escape function for continuous testing at fixed table position. This eliminates instability caused by the table retraction.
- Auto-stop elevation table and automatic preliminary test force loading to provide stable test force generation.
- Complete with one flat and VEE anvil, diamond and 1/16" carbide ball indenters, 2 HRC and 1 HRBW Rockwell test blocks and an HR30N and HR30TW test block.



### SPECIFICATIONS

Model	HR-521	HR521L	HR-523	HR-523L
<b>Order No.</b>	<b>810-202-03A</b>	<b>810-205-03A</b>	<b>810-204-03A</b>	<b>810-207-03A</b>
Preliminary Test Force	29.42N (3kgf), 98.07N (10kgf)			
Test Force	Rockwell	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)		
	Rockwell Superficial	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf)		
Light Force Brinell	HBW2.5/187.5	HBW1/10, HBW1/30, HBW2.516.25, HBW2.5115.625, HBW2.5131.25, *1 HBW2.5162.5, HBW5/25, HBW5/62.5, HBW5/125, HBW10/100		
Force Control	Automatic control (unloading/duration/unloading) with closed-loop feed back			
Console/Display Unit	Touch-screen operation with back-lit LCD graphic display			
Test Force Selection	By touch screen			
Table up/down drive	Manual (w/Auto-brake mechanism)		Power-Drive (for full-automatic measurement)	
Load Duration	0 to 120 sec. (1 sec. step)			
Maximum Specimen Height	8.1" (205mm)	15.5" (395mm)	8.1" (205mm)	15.5" (395mm)
Maximum Specimen Depth	5.9" (150mm)			
Display Indication Functions	Hardness value, Converted hardness value, Test conditions, go/no-go tolerance judgment, statistical processing result Rockwell/Rockwell superficial hardness testing. Continuous testing. Cylindrical/spherical surface compensation, data offset. Hardness conversion (HV, HK, HRA/B/C/D/F/G/15T/30T/45T/15N/30N/45N, HS, HB, HBW, tensile strength) Go/no-go tolerance judgment, measured data editing, data memory (max 1024 data) SPC calculation (No. of data, max/min/mean values, range, upper/lower limit values, standard deviation, No. of passing/defective) Histogram, $\bar{x}$ -R chart			
Data Output	RS-232C, SPC, Centronics			
Dimensions (W x D x H)	9.84" x 26.38" x 23.82" (250 x 670 x 605mm)			
Mass	60kg			

# HR-320MS/430MR/430MS

## SERIES 963 — Rockwell Hardness Testing Machines

### FEATURES

- The new frame design allows the full 7.1" of specimen capacity without the need to cut a hole in the table.
  - Simple to operate; the digital HR320 model uses a flashing bar graph to indicate when the initial test force has been reached.
  - 430 models feature automatic brake and automatic start function that prevent overloading and begins test cycle.
- The HR430 model also includes the dial a weight system for easier load selection.
- All models are complete with Flat and VEE anvils, diamond and 1/16" carbide ball indenters, 2 HRC and 1 HRBW Rockwell blocks (MR models) or 3 Rockwell blocks and an HR30N and HR30TW for MS testers.



**HR-320MS**

**Rockwell/Rockwell Superficial hardness testing machine**  
Motorized Loading  
Motor drive - Button start model



**HR-430MR**

**Rockwell hardness testing machine**  
Motorized Loading  
Motor drive - Automatic start model



**HR-430MS**

**Rockwell/Rockwell Superficial hardness testing machine**  
Motorized Loading  
Motor drive - Automatic start model

### Technical Data

Preliminary test force: 29.42N\*, 98.07N  
Test force  
Rockwell superficial\*: 147.1, 294.2, 441.3N  
Rockwell: 588.4, 980.7, 1471N  
Test force setting: By dial  
Load control: Automatic (loading, duration, unloading)  
Anvil: Flat (ø64mm)  
Max. specimen height: 7.1" / 180mm  
Max. specimen depth: 6.5" / 165mm (from the center of indenter shaft)  
Stage elevation: Manual  
Data output\*: RS-232C, Digimatic code (SPC)  
Power supply: 120V AC, 50/60Hz

\*HR320-430 only

### SPECIFICATIONS

Order Number	963-231-10A	963-240-10A	963-241-10A
Model	HR-320MS	HR-430MR	HR-430MS
Test Scales	Rockwell and Rockwell Superficial	Rockwell	Rockwell and Rockwell Superficial
Standard	JIS B 7726 ISO 6508-2 ASTM E18-10		
Preliminary Test Force	98.07N (10kgf), 29.42 (3kgf)	98.07N (10kgf)	98.07N (10kgf), 29.42 (3kgf)
Test Force Rockwell	588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)		
Test Force Superficial	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf)	—	147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf)
Display	Matrix Backlight LCD		
Hardness Minimum Value	0.1 HR		
Scale Conversions	HRC, HRB, HV, HBW, HS, Mpa plus offset, OK/NG		
Preliminary Test Force	Manual (with Loading Navigator)	Manual (with automatic brake-start)	
Total Test Force Control	Automatic (loading, duration, unloading)		
Loading Method	Dead Weight		
Load Duration (Dwell)	Adjustable (1s to 99s) or Manual		
Maximum Specimen Ht.	7.1" (180mm)		
Maximum Depth	6.5" (165mm)		
Data Output	RS-232C, SPC		
Power Supply	120V AC (±10%), 60Hz		
Dimensions (D x W x H)	20.6"(523mm) x 9.25"(235mm) x 30.7"(780mm)	20.6"(523mm) x 9.25"(235mm) x 30.7"(780mm)	20.6"(523mm) x 9.25"(235mm) x 30.7"(780mm)
Mass	102.07lb (46.3kg)	108.69lb (49.3kg)	110.01lb (49.9kg)

# Optional Accessories

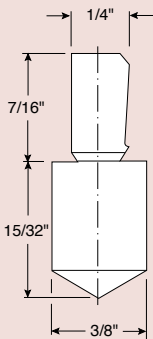
For Rockwell/Rockwell Superficial Type Hardness Testing machine



## Calibration Set

Order No.	Order No.
<b>64BAA241</b>	<b>64BAA242</b>
C Scale Set	B Scale Set
Test Blocks	Test Blocks
64BAA125	64BAA126
64BAA124	64BAA132
64BAA158	64BAA135
Indenter	Indenter
64BAA072	64BAA078
Order No.	Order No.
<b>64BAA243</b>	<b>64BAA244</b>
30N Scale Set	30T Scale Set
Test Blocks	Test Blocks
64BAA128	64BAA129
64BAA165	64BAA140
64BAA167	64BAA130
Indenter	Indenter
64BAA073	64BAA078

## Rockwell Type Diamond Indenters



Order No.	Scale
<b>64BAA072</b>	C
<b>64BAA073</b>	N
<b>64BAA086</b>	A
<b>64BAA071</b>	C & N

Order No.	Hardness
<b>64BAA159</b>	HRA81/86 Rockwell Test Block
<b>64BAA160</b>	HRA75/79 Rockwell Test Block
<b>64BAA161</b>	HRA70/73 Rockwell Test Block
<b>64BAA162</b>	HRA65/68 Rockwell Test Block
<b>64BAA163</b>	HRA60/62 Rockwell Test Block
<b>64BAA249</b>	HRBW95/100 Rockwell Test Block
<b>64BAA126</b>	HRBW90/95 Rockwell Test Block
<b>64BAA131</b>	HRBW80/85 Rockwell Test Block
<b>64BAA132</b>	HRBW70/75 Rockwell Test Block
<b>64BAA133</b>	HRBW60/65 Rockwell Test Block
<b>64BAA134</b>	HRBW50/55 Rockwell Test Block
<b>64BAA135</b>	HRBW40/45 Rockwell Test Block
<b>64BAA127</b>	HRBW30/35 Rockwell Test Block
<b>64BAA136</b>	HRBW20/25 Rockwell Test Block
<b>64BAA137</b>	HRBW10/15 Rockwell Test Block
<b>64BAA138</b>	HRBW0/5 Rockwell Test Block
<b>64BAA125</b>	HRC60/65 Rockwell Test Block
<b>64BAA157</b>	HRC50/55 Rockwell Test Block
<b>64BAA124</b>	HRC40/45 Rockwell Test Block
<b>64BAA123</b>	HRC30/35 Rockwell Test Block
<b>64BAA158</b>	HRC20/25 Rockwell Test Block

Order No.	Hardness
<b>64BAA129</b>	HR30T74/79 Rockwell Test Block
<b>64BAA139</b>	HR30T70/73 Rockwell Test Block
<b>64BAA140</b>	HR30T63/67 Rockwell Test Block
<b>64BAA141</b>	HR30T56/60 Rockwell Test Block
<b>64BAA142</b>	HR30T49/53 Rockwell Test Block
<b>64BAA130</b>	HR30T43/47 Rockwell Test Block
<b>64BAA143</b>	HR30T36/39 Rockwell Test Block
<b>64BAA144</b>	HR30T29/33 Rockwell Test Block
<b>64BAA145</b>	HR30T22/26 Rockwell Test Block
<b>64BAA146</b>	HR30T15/18 Rockwell Test Block
<b>64BAA147</b>	HR15T90/92 Rockwell Test Block
<b>64BAA148</b>	HR15T86/69 Rockwell Test Block
<b>64BAA149</b>	HR15T83/85 Rockwell Test Block
<b>64BAA150</b>	HR15T80/82 Rockwell Test Block
<b>64BAA151</b>	HR15T77/79 Rockwell Test Block
<b>64BAA152</b>	HR15T72/74 Rockwell Test Block
<b>64BAA153</b>	HR15T70/72 Rockwell Test Block
<b>64BAA154</b>	HR15T68/69 Rockwell Test Block
<b>64BAA155</b>	HR15T64/66 Rockwell Test Block
<b>64BAA156</b>	HR15T61/63 Rockwell Test Block

Order No.	Hardness
<b>64BAA222</b>	HR45N65/70 Rockwell Test Block
<b>64BAA223</b>	HR45N55/60 Rockwell Test Block
<b>64BAA224</b>	HR45N45/50 Rockwell Test Block
<b>64BAA225</b>	HR45N35/40 Rockwell Test Block
<b>64BAA226</b>	HR45N25/30 Rockwell Test Block
<b>64BAA128</b>	HR30N64/69 Rockwell Test Block
<b>64BAA164</b>	HR30N68/73 Rockwell Test Block
<b>64BAA165</b>	HR30N59/64 Rockwell Test Block
<b>64BAA166</b>	HR30N50/55 Rockwell Test Block
<b>64BAA167</b>	HR30N40/45 Rockwell Test Block
<b>64BAA168</b>	HR15N90/93 Rockwell Test Block
<b>64BAA169</b>	HR15N85/88 Rockwell Test Block
<b>64BAA170</b>	HR15N80/83 Rockwell Test Block
<b>64BAA171</b>	HR15N75/77 Rockwell Test Block
<b>64BAA172</b>	HR15N69/72 Rockwell Test Block

## Carbide Ball Indenters

Order No.	Description
<b>19BAA515</b>	1/16" Carbide ball indenter
<b>19BAA504</b>	1/8" Carbide ball indenter
<b>19BAA505</b>	1/4" Carbide ball indenter
<b>19BAA506</b>	1/2" Carbide ball indenter
<b>19BAA507</b>	1/16" Carbide ball (1pc.)
<b>19BAA508</b>	1/8" Carbide ball (1pc.)
<b>19BAA509</b>	1/4" Carbide ball (1pc.)
<b>19BAA510</b>	1/2" Carbide ball (1pc.)

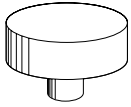
## Steel Ball Indenters

Order No.	Description
<b>64BAA074</b>	1/16" diameter steel ball indenter
<b>19BAA078</b>	1/16" diameter steel ball indenter (auto-discrimination type)
<b>64BAA075</b>	1/8" diameter steel ball indenter
<b>64BAA079</b>	1/8" diameter steel ball indenter (auto-discrimination type)
<b>64BAA076</b>	1/4" diameter steel ball indenter
<b>64BAA080</b>	1/4" diameter steel ball indenter (auto-discrimination type)
<b>64BAA077</b>	1/2" diameter steel ball indenter
<b>64BAA081</b>	1/2" diameter steel ball indenter (auto-discrimination type)
<b>64BAA082</b>	1/16" diameter spare steel ball (10 pcs)
<b>64BAA083</b>	1/8" diameter spare steel ball (10 pcs)
<b>64BAA084</b>	1/4" diameter spare steel ball (10 pcs)
<b>64BAA085</b>	1/2" diameter spare steel ball (10 pcs)

# Optional Accessories

For Rockwell/Rockwell Superficial Type Hardness Testing machine

## Flat anvil



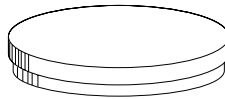
Diameter: 2.5" (64mm)

**810-039**

Diameter: 1.5" (38mm)

**810-039-08**

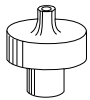
## Round Table



Diameter: 7.08" (180mm)

**810-037**

## Spot anvils



Diameter: .25" (6.4mm)

Height: .88" (22mm)

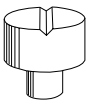
**810-044**



Diamond-tipped type for  
Rockwell superficial hardness measurement

**810-030**

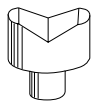
## V-anvils



Diameter: 1.5" (38mm)

Groove width: .38" (9.7mm)

**810-041**



Diameter: 1.5" (38mm)

Groove width: 1.5" (38mm)

**810-040**



Diameter: .38" (9.7mm)

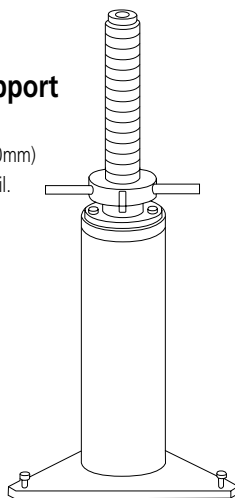
Groove width: .38" (9.7mm)

**810-042**

## Adjustable support

Adjustable height:  
13 to 18.5" (330 to 470mm)  
Used to mount a V-anvil.

**810-028**



**264-504-5A**



**937386**



## Optional Accessories

**All tester Except HM 200:**

**06ADV380E:** USB input tool – Tester to PC

**937386:** Tester to DP1-VR Printer

**HM 200 Type:**

**06ADV380D:** USB input tool – Tester to PC

**936937:** Tester to DP1-VR Printer