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Our Sister Concern : RELIEF SERVICE CENTRE

Repairs, Removal of Jaw Error, Bore Gauge Extension, Instrument Modifications & Spares

Quotation

106	Rubber hardness tester

Shore	A - III	A - Gold	A – Super Y2K	D- III	D – Gold	Catalog
STI / TEE- Rs.	2500	2750		3600	--	Page No . - 3
BSE - Rs.	5900	10000	15800	10920	14370	Page No . – 3
KANN - Rs.	1200					Page No . – 3
MILHARD - Rs.	4150			5200		Page No . - 4

Kann Witn 10% Discount

Shore	C - Sand / Package Hardness Tester	Foam	Yarn	Stand - A	Stand – D	Page no
STI / TEE - Rs.	5900	--	5900			
BSE – Rs.	11500	11850	10850	6600	7750	

106 - 1	Rubber Hardness Tester – Insize Make

Shore	SHORE – A	SHORE – D	SHORE – C	TESTING STAND	TESTING STAND
Rs.	**8914**	**15645**		**15158**	**18515**
Code	**ISH-SAM**	**ISH-SDM**		**ISH-STAC**	**ISH-STD**
Catalog	Page No. – 10	Page No. – 10		Page No. – 10	Page No. – 10

***** Warranty – 6 Months, Certificate - No**

106 - 2	Digital Rubber Hardness Tester

Shore	SHORE – A	SHORE – D	EDI – Digital	Good China	IRHD
Rs.	27213		11800	4200	32000
Code	ISH-DSA-P		Shore A Digital	Shore A or D Digital	IRHD
Make	**Insize**		**EDI – Digital**	**Good China**	**Stech (Indian)**
Page No	**Page No. – 11**				

106 - 3	Digital Rubber Hardness Tester - Metrix+ @ With 10% Discount	Model		Rs

1	Shore " A " Rubber Hardness Tester RHT – A For Soft Rubber / Felt Etc	**RHT-A**		15000
2	Shore " D " Rubber Hardness Tester RHT – D For Hard Rubber / Plastic Etc	**RHT-D**		17000
3	Analog Rubber Hardness Tester Shore – A Kori - Japan	**KR 14**	Page No. -7	10400

106 - 4	Rubber hardness tester Adis Make

Make	Shore - A	Shore - A	Shore - A	Shore - D	Shore - D
Model	Basic	Export	Basic Without Drag Pointer	Basic	Export
Rs	**2450**	**3600**	**2200**	**2750**	**4150**
Discount %	**10**	**10**	**10**	**10**	**10**
Catalog	Page No. – 16	Page No. – 17	Page No. – 17		

Terms & Conditions –

- Goods offered - Subject to Prior Sale Basic Without Drag Pointer
- Price Validity: "15 Days from Date of Quotation"
- C.S.T 2% extra against form C. Otherwise 5% without form C For Out of Gujarat Sales only.
- VAT 5% extra for Sales within Gujarat. Prices Ex-Godown Ahmedabad.
- Payment against Proforma Invoice, Packing, Forwarding & Freight extra.
- **Bank Detail** – Kotak Mahindra Bank Ltd.
- **Branch** – Shivranjini
- **Bank IFSC Code** - KKBK 0000 810
- **Bank Account No**. 08102 00000 2689
- Note - While making payment online do mention your Company's name.
- TIN NO 24070901229 , CST No. 24570901229
- We are looking forward to your valued orders.

RUBBER TESTING INSTRUMENTS

	DESCRIPTION		MODEL
1	(Patented) Digital Shore-A Durometer, with constant contact pressure for rubber & soft plastics as per DIN 53505 and ASTM D 2240. Reading : 1 to 100 Shore A Least Count : 0.5 Shore A.		SHR-A-Di-Y2K .....
2	(Patented) Digital Shore-D Durometer, with constant contact pressure for hard rubber, ebonite, plastics, graphites and bakelite,as per DIN 53505 and ASTM D 2240. Reading : 1 to 100 Shore D. Least Count : 0.5 Shore D.		SHR-D-Di-Y2K .....
3	(Patented) Analog Composite type constant-load Shore-A circular hardness tester for rubber and soft plastics, with same details as in item 1. Reading : 1 to 100 Shore A Least Count : 1 Shore A.		SHR-A-SUPER-Y2K
4	(Patented) Analog composite type constant-load Shore-D circular type hardness tester for hard rubbers, ebonite, plastics, graphites and bakelite, with same details as in item 2. Reading : 1 to 100 Shore D Least Count : 1 Shore D.		SHR-D-SUPER-Y2K
5	(Patented) Intl. GOLD MEDAL award winning Shore-A circular type hardness tester for soft rubber with precision gear mechanism as per the latest German Std. DIN 53505 and latest American Std. ASTM D 2240. Reading : 1 to 100 Shore A Least Count : 1 Shore A.		SHR-A-GOLD.....
6	(Patented) Intl. GOLD MEDAL award winning Shore-D circular type hardness tester for hard rubbers, ebonite, plastics, graphites and bakelite, with same details as in item 4. Reading : 1 to 100 Shore D Least Count : 1 Shore D.		SHR-D-GOLD .....
7	(Patented) Shore-A hardness tester for rubber and soft plastics.		SHR-A-III .....
8	(Patented) Shore-D hardness tester for hard rubbers, ebonite, plastics, graphites and bakelite.		SHR-D-III .....

MILHARD

DUROMETERS

Series-DA / DD

Model	Unit	Range (shore)	Least Count (shore)
DA-1	Shore A	0-100	1
DD-1	Shore D	0-100	1

Supplied with master test gauge

RUBBER HARDNESS TESTER

CONFORMS TO:

German Standard DIN - 53505

American Standard ASTM - D2240.

RUBBER HARDNESS TESTER

Precision Hardness Tester Suitable for checking on standard specimen and various Rubber parts in production control, routine and Series Test.

TECHNICAL DATA:

Range 0° - 100° Shore Unit

Least Count - 1° Shore Unit

Check Gauge - 25°, 50° & 75°, Shore Unit

Indentor : Shore A - Truncated Cone.

Shore D - Sharp Cone.

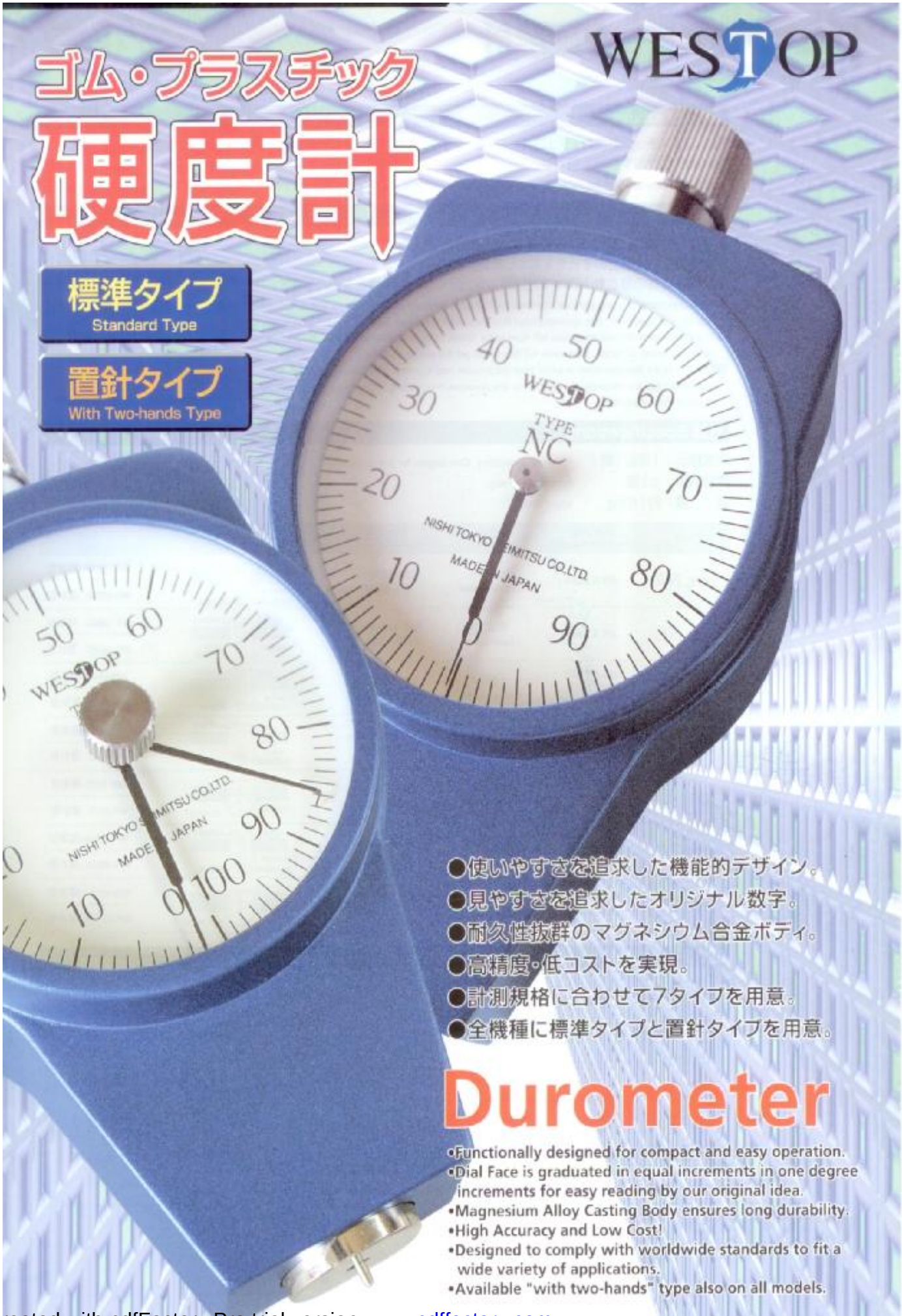
Available in Shore - A & Shore D models

WESTOP

ゴム・プラスチック
硬度計

標準タイプ
Standard Type

置針タイプ
With Two-hands Type



- ●使いやすさを追求した機能的デザイン。
- ●見やすさを追求したオリジナル数字。
- ●耐久性抜群のマグネシウム合金ボディ。
- ●高精度・低コストを実現。
- ●計測規格に合わせて7タイプを用意。
- ●全機種に標準タイプと置針タイプを用意。

Durometer

- •Functionally designed for compact and easy operation.
- •Dial Face is graduated in equal increments in one degree increments for easy reading by our original idea.
- •Magnesium Alloy Casting Body ensures long durability.
- •High Accuracy and Low Cost!
- •Designed to comply with worldwide standards to fit a wide variety of applications.
- •Available "with two-hands" type also on all models.

2. SPECIFICATIONS

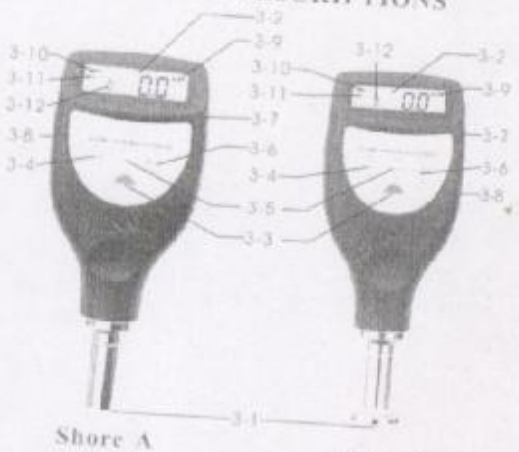
Display: 4 digits, 10 mm LCD
Range: 0~100 H(A, C, D)
Resolution: 0.1
Measurement deviation: error≤ ±1
Power supply: 4x1.5v AAA (UM-4) battery
Operating condition: Temp. 0~50℃
Humidity <80%
Size: 162x65x28mm (6.4x2.6x1.1inch)
Weight: about 170g
(not including batteries)
PC interface: RS232C interface
Power off: 2 modes
Manual off at any time by depressing the power key till OFF shows on the display or Auto power off after 10 minutes from last key operation.

Accessories:
Carrying case.....1 pc.
Operation manual.....1 pc.
Test block.....1 pc.

NOTE: this test block is not the real hardness test sample. It is only an imitation. Just place the block onto a flat glass, then place the point of indenter into the hole of the block when take measurements.

Optional accessory:
Cable and software for RS232C

3. FRONT PANEL DESCRIPTIONS



3-1 Sensor
3-2 Display
3-3 Multifunction key ⊖
3-4 Max hold key
3-5 Zero key
3-6 N/Average key
3-7 RS232C interface
3-8 Battery Compartment/Cover
3-9 Indicator of Max. Value
3-10 Indicator of Average value
3-11 State of average
3-12 Number of measurements in the state of average

4. MEASURING PROCEDURE

4.1 Test specimen
Shore A: 6mm thick minimum
Shore D: 3mm thick minimum
Specimen should allow measurement to be taken at least 12 mm from any edge.
Specimen surface should be flat and parallel to allow the presser face to contact to the specimen over an area which has a minimum radius of 6mm from the durometer probe.
The specimen may be constructed with layered pieces to achieve the necessary thickness requirements, however measurements taken on these specimens may not agree with those made on solid specimens, due to the surface faces between layers not being in complete contact.

4.2 Depress and release the key ◓ to power the tester on.

4.3 Depress the 'MAX' key till the mark MAX shows on the display.

4.4 Hold the durometer vertically with the point of the indenter at least 12 mm from any edge. Apply the presser foot to the specimen as rapidly as possible, without shock, keeping the foot parallel to the surface of the specimen. Apply just sufficient force to obtain firm contact between the presser foot and the specimen. Hold for 1 or 2 seconds, the maximum reading can be obtained automatically.

4.5 To take the next measurement, just depress the 'ZERO' key and repeat 4.4. On the other hand, you can depress the 'MAX' key till the mark MAX disappears from the display. And then repeat the step 4.3 and 4.4.

4.6 If other than a maximum reading is needed, no [illegible] 'MAX' showing on display. In such case, the reading on the display is an instant value. just hold the durometer in place without motion and obtain the reading after the required time interval (Normally less than 1 second).

4.7 How to take average value

4.7.1 To take the average value of many times of measurements, just depress and release the 'N/AVE' key to make the symbol 'N' showing on the display, followed by a digit between 1-9 with the prefix 'No.'. Here the digit is the times of measurements used to calculate the average value. Every time depress and release the 'N/AVE' key, the digit will increase 1. And the digit will become '1' while depressing the 'N/AVE' key at '9'.

4.7.2 Adjust the digit to the number needed and depress 'MAX' key or 'ZERO' key to return to the measurement state or wait for several seconds till '0' on the display.

4.7.3 Take measurements as per steps from 4.3 to 4.5 Be sure that every test should be 6 mm apart. Every time take a measurement, the reading and the times of measurements show on the display. When the times of measurements is equal to the number set, the unit first displays the reading of the last, and then display the average value of last 'N' measurements, followed by 2 beeps, with a symbol 'AVE' indicating on the display.

4.7.4 To take the next average value, just repeat 4.7.3.

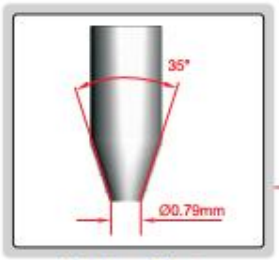
4.7.5 To release from average measurement, just depress the 'N/AVE' till 'N' disappears.

5. CALIBRATION CHECK

5.1 Zero calibration
Hold the durometer vertically with the point of the indenter hanging in the air, the reading on

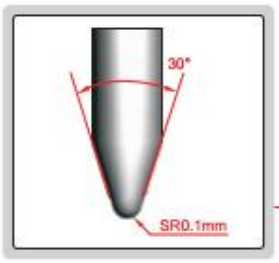
INSIZE MAKE

SHORE DUROMETER



blunt taper indenter

ISH-SA



sharp point indenter

ISH-SD

ball indenter

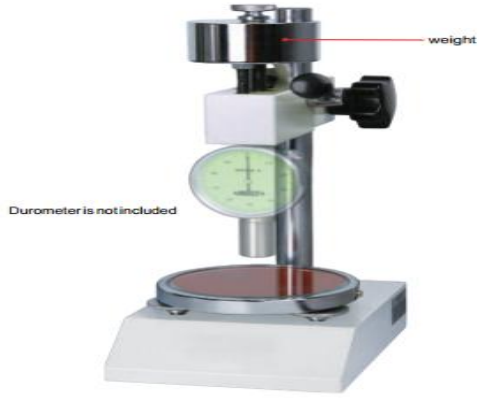
ISH-SC

- According to ISO868, ISO7619, ASTM D 2240
- Optional accessory: hardness test block for ISH-SA(code **ISH-BSA**, page S13), testing stand(page S12)

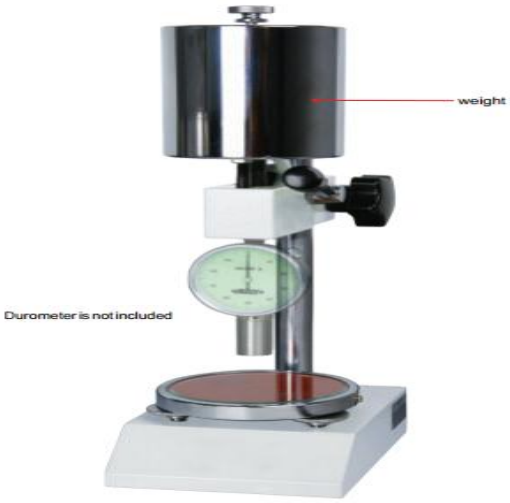
SPECIFICATION

Code	ISH-SA	ISH-SD	ISH-SC
Scale	Shore A	Shore D	Shore C
Application	natural rubber, soft elastomer, etc.	hard elastomer, plastic, hard rubber, etc.	foam, sponge, etc.
Measuring range	HA: 10-90	HD: 20-90	HW: 10-90
Resolution	1HA	1HD	1HW
Indenter protrusion	2.5mm	2.5mm	2.5mm
Dimension	115×60×25mm		
Net weight	500g		

TESTING STAND FOR SHORE DUROMETER



ISH-STAC



ISH-STD

- Can perform repeatable hardness measurement due to fewer possibilities of human error or measurement variations

SPECIFICATION

Code	ISH-STAC	ISH-STD
Applicable durometer	ISH-SA, ISH-SC	ISH-SD
Stage diameter	Ø100mm	Ø100mm
Maximum workpiece height	75mm	75mm
Mass of weight	1kg	5kg

METHODS OF HARDNESS TESTER

TYPE	INDENTOR DESCRIPTION	APPLICATION
A	Truncated cone with 35° ± 0.25° included angle	Soft rubber, Elastomers
B	Conical with 30° ± 1.00° included angle	Rubber and Elastomers, willow (wood)
C	Truncated cone with 35° ± 0.25° included angle	Medium hard rubber, plastic
D	Conical with 30° ± 1.00° included angle	Hard rubber, plastic, bakelite,ebonite & leather.
0	5 mm dia hemispherical	Soft printing rollers,textile winding
00	2.5 mm dia. hemispherical	Sponge rubber foam, very soft rubber,fruits

DIGITAL SHORE DUROMETER

DATA OUTPUT

- According to ISO868, ISO7619, ASTM D 2240
- Average and peak (max.) mode
- Dwell time is adjustable
- Low and high limits with judgement
- 500 memories
- Wireless connection to printer
- Handhold use or work with test stand (code: ISH-DS-STAND)
- Automatic power off


calibration block (included)


printer (optinal)

SPECIFICATION

Code	ISH-DSA-P	ISH-DSD-P
Price(₹)	26445	35783
Unit	Shore A	Shore D
Test material	soft plastic, soft rubber, etc.	hard plastic, hard rubber, etc.
Measuring range	0~100HA	0~100HD
Resolution	0.1HA	0.1HD
Accuracy	±1HA	±1HD
Indenter protrusion	2.5mm	
Output	wireless and USB	
Power supply	built-in rechargeable battery	
Dimension	153x50x29mm	
Weight	170g	

STANDARD DELIVERY

Main unit	1pc
Calibration block	1pc
USB cable and software	1pc
AC/DC adapter	1pc

OPTIONAL ACCESSORY

Printer	ISH-DS-PRINTER
Test stand	ISH-DS-STAND
1kg weight (for ISH-DSA-P)	ISH-DSA-W1
5kg weight (for ISH-DSD-P)	ISH-DSD-W5

Use ISH-DSD-P when measuring result is more than 90HA
Use ISH-DSA-P when measuring result is less than 20HD

International Rubber Hardness Degree Meter

OPERATING MANUAL FOR
I. R. H. D. HARDNESS TESTER

The hardness of rubber is one of the most important properties, which determines the suitability of rubber components for the intended application. Improper hardness of any component may defeat the basic purpose for which the comment is designed. Thus accurate and reliable determination of the hardness is of extreme importance in rubber field.

Amongst the various methods of the determination of rubber hardness the most important one are :-

a. Durometer
b. Dead Load Hardness Tester

While the first uses the principle of indentation of a truncated cone in rubber with varying loads through spring. The second method uses a fixed dead load on indentor. Whereas the first method suffers from the disadvantages of permanent set getting developed in the spring and thus affecting the readings, the second method being the dead load principle, is free from this shortcomings. The Indian Standards specifications, British standard specification and the ISO specifications have also accepted only the dead load hardness tester in their recommendations.

The principle behind determination of hardness by dead load apparatus is based on the measurement of the difference between the depth of indentation of a standard ball into the rubber under a small contact force and a large indenting force. From this difference the hardness in International Rubber Hardness Degrees (IRHD) is derived by the use of a suitable table.

TECHNICAL DATA :

Indentor	:	2.50 mm hemispherical.
Pressure foot	:	20 mm O. D. x 6 mm I. D.
Force on foot	:	8.3 N +/- 1.5
Force on ball	:	

CONTACT	INDENTING	TOTAL
0.3N $\pm$ 0.02	5.4N $\pm$ 0.01	5.7N $\pm$ 0.03

PREPARATION OF NONE STANDARD TEST SPECIMAN :

The none standard spaceman can be checked with suitable spaceman holder, which provide a perfect contact with the spaceman and the Indentor point.

The Hardness measurement of a product like "O" ring. Oil seals washer and all other thin and small items can be checked with suitable Jig which is perfectly Holding the spaceman and avoiding slippage of indentor point from the spaceman surface. Take the Hardness as per the below procedure.

(Contd..2)

TEST PROCEDURE :

Lower the specimen holding platform sufficiently for placing the sample by rotating the handle below it in counter clockwise direction. Lightly dust the upper and lower surfaces of the test piece with talcum powder and place it centrally on the platform.

Raise the platform gradually till the FOOT is holding the specimen. This is indicated by the outer cage being raised as the platform is raised further. Continue to raise the specimen on the platform till the plunger and indenting ball are pressed into the specimen (exerting "contact" force). This will be indicated by the lifting of the plunger alongwith the specimen. Apply the contact force for 5 seconds. Press the push button to operate the buzzer for giving the vibrations. Note the reading of the dial gauge. Raise the specimen further till the indenting weight is also raised thereby exerting the total load on the ball. Allow this load to be applied for 30 seconds and Note the reading on the Dial gauge.

Find out the depression (D) of the plunger from the difference of the two readings. Use the value of D (Expressed as - hundredths of a millimeter) to find out the hardness in INTERNATIONAL RUBBER HARDNESS DEGREES from the accompanying table.

NUMBER OF READINGS :

One measurement shall be made at either three or five different points distributed over the test piece and the median of the results shall be taken, that is the middle value when these are arranged in increasing order.

EXPRESSION OF RESULTS :

Hardness shall be reported to the nearest whole number as the median of the three or five measurement in International Rubber Hardness Degrees.

TEST REPORT :

The Test report shall include the following particulars :

1. Hardness expressed in IRHD.
2. Dimensions of test piece and whether made up of one or two piece.
3. Temperature of test.
4. Type of surface tested (Moulded, buffed or otherwise).

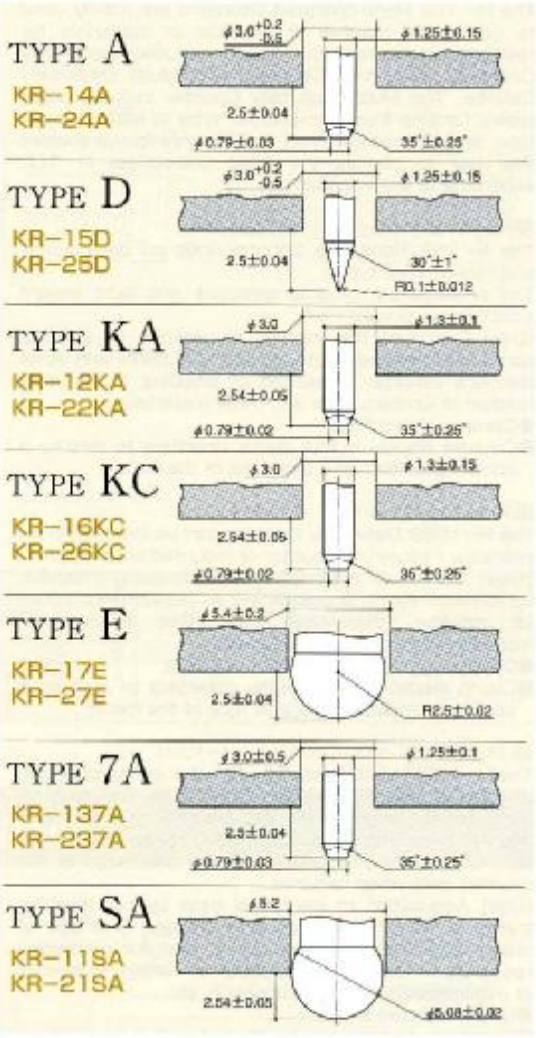
****

IS : 3400 (Part - II) - 1980
Conversion Of Value Of D To International Rubber Hardness Degree (IRHD)

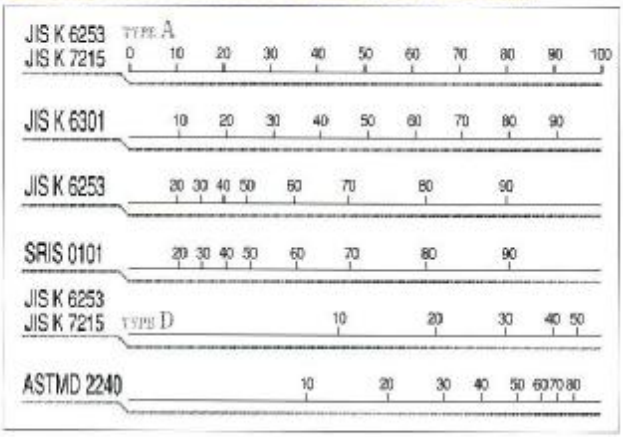
D 0.01 mm	International Rubber Hardness Degree	D 0.01 mm	International Rubber Hardness Degree	D 0.01 mm	International Rubber Hardness Degree	D 0.01 mm	International Rubber Hardness Degree
0	100.0	45	73.9	90	52.3	135	38.9
1	100.0	46	73.3	91	52.0	136	38.7
2	99.9	47	72.7	92	51.6	137	38.4
3	99.8	48	72.2	93	51.2	138	38.2
4	99.6	49	71.6	94	50.9	139	38.0
5	99.3	50	71.0	95	50.5	140	37.8
6	99.0	51	70.4	96	50.2	141	37.5
7	98.6	52	69.8	97	49.8	142	37.3
8	98.1	53	69.3	98	49.5	143	37.1
9	97.7	54	68.7	99	49.1	144	36.6
10	97.1	55	68.2	100	48.8	145	36.7
11	96.5	56	67.6	101	48.5	146	36.5
12	95.9	57	67.1	102	48.1	147	36.2
13	95.3	58	66.6	103	47.8	148	36.0
14	94.7	59	66.0	104	47.5	149	35.8
15	94.0	60	65.5	105	47.1	150	35.6
16	93.4	61	65.0	106	46.8	151	35.4
17	92.7	62	64.5	107	46.5	152	35.2
18	92.0	63	64.0	108	46.2	153	35.0
19	91.3	64	63.5	109	45.8	154	34.8
20	90.6	65	63.0	110	45.6	155	34.6
21	89.8	66	62.5	111	45.3	156	34.4
22	89.2	67	62.0	112	45.0	157	34.2
23	88.5	68	61.5	113	44.7	158	34.0
24	87.8	69	61.1	114	44.4	159	33.8
25	87.1	70	60.6	115	44.1	160	33.6
26	86.4	71	60.1	116	43.8	161	33.4
27	85.7	72	59.7	117	43.5	162	33.2
28	85.0	73	59.2	118	43.3	163	33.0
29	84.3	74	58.8	119	43.0	164	32.8
30	83.0	75	58.3	120	42.7	165	32.6
31	82.9	76	57.9	121	42.5	166	32.4
32	82.2	77	57.5	122	42.2	167	32.3
33	81.5	78	57.0	123	41.9	168	32.1
34	80.9	79	56.6	124	41.7	169	31.9
35	80.2	80	56.2	125	41.4	170	31.7
36	80.0	81	55.8	126	41.1	171	31.6
37	78.9	82	55.4	127	40.9	172	31.4
38	78.2	83	55.0	128	40.6	173	31.2
39	77.6	84	54.6	129	40.4	174	31.1
40	77.0	85	54.2	130	40.1	175	30.9
41	76.4	86	53.8	131	39.9	176	30.7
42	75.8	87	53.4	132	39.6	177	30.5
43	75.9	88	53.0	133	39.4	178	30.4
44	74.5	89	52.7	134	39.1	179	30.2
						180	30.0

Durometers

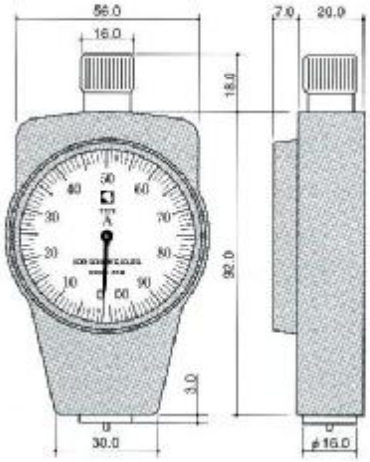
KR-14A



Comparison Between Various Hardness Data



Model	Applicable Standard	use	Weight applicable	note
KR-14A: Standard type KR-24A: With Two-hands type	JIS K 6253 ISO 7619 ASTM D 2240	Ordinary rubber	550-8,050mN (56.1-821.1gf)	A
KR-15D: Standard type KR-25D: With Two-hands type	JIS K 6253 ISO 7619 ASTM D 2240	Hard rubber	0-44,450mN (0-4,533gf)	A
KR-12KA: Standard type KR-22KA: With Two-hands type	JIS K 6301	Ordinary rubber	539-8,379mN (55-855gf)	B
KR-16KC: Standard type KR-26KC: With Two-hands type	JIS K 6301	Hard rubber	980-44100mN (100-4500gf)	B
KR-17E: Standard type KR-27E: With Two-hands type	JIS K 6253	Soft rubber	550-8050mN (56.1-821.1gf)	A
KR-137A: Standard type KR-237A: With Two-hands type	JIS K 7215 ISO R 868A ASTM D 2240A	Plastic	549-8,061mN (56-822gf)	B
KR-11SA: Standard type KR-21SA: With Two-hands type	SRIS 0101 JIS S 6050	Soft rubber	539-8,385mN (55-855gf)	B



Shore A Export

Shore A Basic

Shore A Basic Without Drag Point