

12 Durometer & IRHD Hardness Tester

Abandunt Lineups of Hardness Testers for ISO and JIS standard.

Durometers show the degree of hardness by value whether a non-rigid material like rubber is soft or hard (hardness gauge for rubber or plastic). Recently, JIS standard and ISO standard have been drastically revised and details of hardness tester of rubber and method of measuring hardness are changed. As an all embracing manufacturer of non-rigid material hardness tester, Teclock proposes lots of measuring methods of measuring hardness of not only rubber and plastic but many non-rigid materials and elastic materials.



IRHD(M-method) Hardness Tester for standard can measure hardness of O-ring, small rubber parts and thin rubber sheet.



Pocket type and Digital Durometer with peak hold type.



In order to solve individual difference of measured value, it is clearly mentioned in the standard to measure hardness by mounting durometer to special stand.

Features, Measuring hardness, Durometer standard	---- 136
JIS K 6253 compliance	----- 137
GX-02series Automatic Hardness Tester	----- 138
GX-700II Totally Automatic type IRHD M-method	----- 139
Model selection of Durometer, Comparison of Measured Value	---- 140,141
JIS K 6253 Compliance	----- 142
Deep Hole, Long Leg Type, Pocket Type	----- 143
JIS K 7215 Compliance, JIS K 7312 Compliance	----- 144

ASTM D 2240 Compliance, TECLOCK Original standard	---- 145
Thin sheet hardness Tester, JIS K 6301 Compliance	---- 146
Durometer Standard Table	----- 147
GX- 610II Automatic type Motor Driving Durometer Stand	---- 148
Measuring Stand for Durometer	----- 149
Durometer Periodical Inspection and Calibration	---- 150
Precautions on use of Durometer	----- 151
“Duro” of Durometer means “hardness”	----- 152

Features of Durometer by Teclock

Original designed the key parts

We develop and design the most critical mechanical parts, movements. So, Original Durometer was developed as the application measurement equipment of dial gauge using rack and pinion etc.. These movements are supplied to other durometer companies by OEM.

Lineups best in the world

The variety of materials, from Urethane foam to Plastic can be measured by Teclock Durometer. So, We design the Pressurized Face shape for sufficient adhesion to many work materials. Number of Lineups is best in the world.

Sleek and Ergonomic design

We develop the products after in pursuit of measurement quality by easy to hold shape, pressured surface shape for sufficient adhesion to work piece and ergonomic design.

Calibration certificate can be issued

Teclock can originally issue 3 kinds of traceability system diagram, calibration and inspection report.

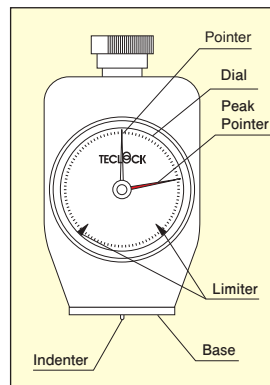
Measuring hardness with Durometer

1) In case of measuring by pushing by hand, putting pressurized surface of durometer held by hand from the top vertically with a certain speed to the flat face of work piece which is put on the flat face. Then, after adhering it, regard the value measured within the passed time prescribed by standard as "hardness"

2) In case of measuring hardness by mounting durometer to stand, measuring speed (not more than 3.2mm/sec.), pressurized load (type A, E is 1kgf, type D is 5kgf) and pressurized surface diameter ($\phi 18\text{mm}$) of type A / D durometers including tolerance are standardized.

3) Measuring point of test piece is to be inside from its edge by 12mm or more and clearance is to be 6mm and more. Thickness is normally 6mm and more, and 10mm and more for type E.

4) Test environment : Temperature is $23^{\circ}\text{C}\pm 2$, humidity is $50\pm 5\%$ and median or average is applied for measured value. If 50 show in type A case, it is described[A50]. These are ruled for each standard.



Description



As to measuring hardness by pushing by hand, durometer to work piece form the top and read value by making pressed surface adhere to durometer.



In order to solve individual difference of measured value, it is clearly mentioned in the standard to measure hardness by mounting durometer to stand.

Measuring hardness with Durometer

Standard	Type	Test Time	Test Report ex. by Type A	Data Summary
JIS K 6253 ⁻²⁰¹² Rubber, vulcanized or thermoplastic Determination of hardness	Type A, D, E Durometer	Vulcanized rubber : 3sec Thermoplastic rubber : 15sec or after regulating time	A 50	5-points median more than 6mm off
JIS K 7215 ⁻¹⁹⁸⁶ Testing Methods for Durometer Hardness of Plastics	Type A, D, E Durometer	1sec or less	HDA 50	5-points or more median 6mm or more
JIS S 6050 ⁻²⁰⁰² Plastics erasers	—	At first weighing and 30sec later	—	Average of 3 initial 30 sec later measurement
JIS K 7312 ⁻¹⁹⁹⁶ Physical testing methods for molded products of thermosetting polyurethane elastomer	Type A (Shore A) Type D (Shore D) Type C (Asker C)	At first weighing and 30sec later	HsA 50	Average of 5 initial 30 sec later measurement
JIS K 6301 ⁻¹⁹⁹⁵ Physical testing methods for vulcanized Rubber (Aug.-1998 abolition)	Type A, C Durometer	At first weighing	50 HsJIS A	Average of 5 initial
ISO 7619 ⁻²⁰¹⁰ Rubber, vulcanized or thermoplastic Determination of hardness	Type A, D, E(AO) Durometer	Vulcanized rubber : 3sec Thermoplastic rubber : 15sec or after regulating time	A 50	5-points median more than 6mm off
ISO 868 ⁻²⁰⁰³ Plastics and ebonite Determination of indentation hardness	Type A, D Durometer	Within 1sec after firm contact or After 15sec \pm 1sec	A / 50 / 1	5-points median more than 6mm off
ASTM D 2240 ⁻⁰⁵ Standard Test Method for Rubber Property Durometer Hardness	Type A, B, C, D, E, DO, O, OO, OOO Durometer	Within 1sec after firm contact(Max. value) or After determined other test time	A / 50 / 1	5-points of average
DIN 53505 ⁻²⁰⁰⁰ Shore A and Shore D hardness testing of rubber	Type A, D Durometer	After 1sec or 3sec after firm contact	50 A (with Test time)	3-points or more median

Calibration certificate can be issued to all Teclock durometers.

There is a case that durometers correspond to "Monitoring Machine" and "Measuring Machine" of ISO 9001. Teclock has obtained the authentication of ISO 9001 and can originally issue 3 kinds of traceability system diagram, calibration certificate and inspection report.



JIS K 6253 Compliance



For Hardness test of vulcanized or thermoplastic rubber

Analog New JIS compliance ISO compliance

These Durometers are in compliance with JIS K 6253, JIS K 7215, ISO 7619 and DIN 53505 etc., and are designed faithfully by " Rubber, vulcanized or thermoplastic Determination of hardness " in JIS K 6253.

Features

- Indication error is ± 0.5 Dial reading, so it is improved reliability.
- In case using stand, select R type (Pressurized Face $\phi 18\text{mm}$).
- Recommendation Stand is GS-610II. As usage, can be selected GS-612 or GS-615 (P148).
- Calibration certificate can be issued as Standard.



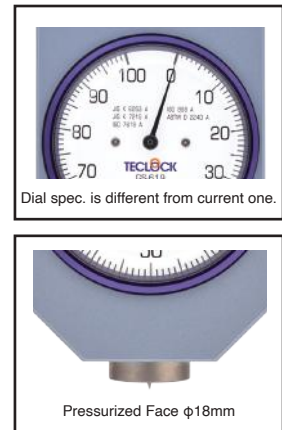
GS-619
·Pressurized Face Square



GS-620R
·Pressurized Face Circle



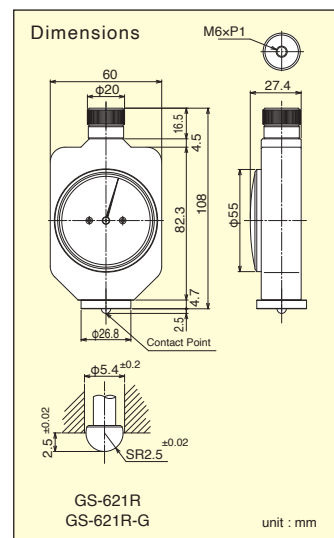
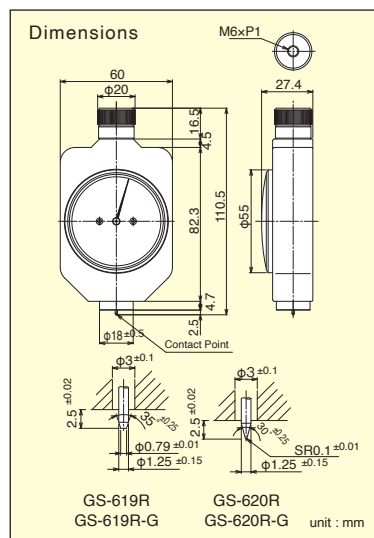
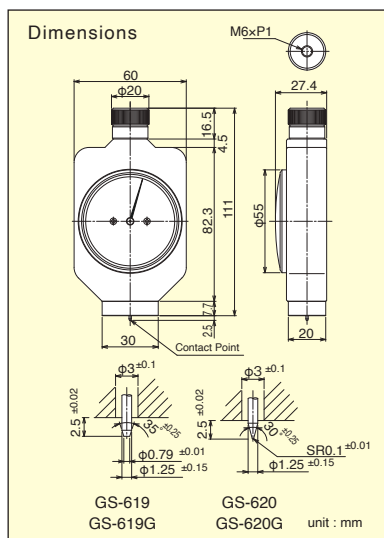
GS-621R-G
·Pressurized Face Circle
·Peak Pointer type



Specifications

Model	Type	Application / Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Presser Foot (mm)	Height (mm)	Weight (g)	Suggeste List Price	Current Model
GS-619	Type A	General rubber (Medium hardness)	JIS K 6253 JIS K 7215 ISO 7619 ISO 868 ASTM D 2240	550-8050mN	Truncated Cone of $\phi 0.79$ with 35 angle	30x20	2.50	239	64,130 JPY	GS-719N
GS-619G	Type A(Peak Pointer Type)	General rubber (Medium hardness)		550-8050mN	Truncated Cone of $\phi 0.79$ with 35 angle	30x20	2.50	245	70,180 JPY	GS-719G
GS-619R	Type A	General rubber (Medium hardness)		550-8050mN	Truncated Cone of $\phi 0.79$ with 35 angle	$\phi 18$	2.50	217	64,130 JPY	GS-719R
GS-619R-G	Type A(Peak Pointer Type)	General rubber (Medium hardness)		550-8050mN	Truncated Cone of $\phi 0.79$ with 35 angle	$\phi 18$	2.50	223	70,180 JPY	GS-719R
GS-620	Type D	Hard rubber (High hardness)		0-44450mN	Conical Cone of SR0.1 with 30 angle	30x20	2.50	239	64,130 JPY	GS-720
GS-620G	Type D(Peak Pointer Type)	Hard rubber (High hardness)		0-44450mN	Conical Cone of SR0.1 with 30 angle	30x20	2.50	245	70,180 JPY	GS-720G
GS-620R	Type D	Hard rubber (High hardness)	0-44450mN	Conical Cone of SR0.1 with 30 angle	$\phi 18$	2.50	217	64,130 JPY	GS-720R	
GS-620R-G	Type D(Peak Pointer Type)	Hard rubber (High hardness)	0-44450mN	Conical Cone of SR0.1 with 30 angle	$\phi 18$	2.50	223	70,180 JPY	GS-720R	
GS-621R	Type E(AO)	Soft rubber (Low hardness)	JIS K 6253 ISO 7619	550-8050mN	Hemisphere of SR2.50	$\phi 27$	2.50	230	64,130 JPY	GS-721N
GS-621R-G	Type AO(Peak Pointer Type)	Soft rubber (Low hardness)		550-8050mN	Hemisphere of SR2.50	$\phi 27$	2.50	236	70,180 JPY	GS-721G

*) GS-619R, GS-619R-G, GS-620R and GS-620R-G are in compliance with DIN 53505.



SmartTester GX-02 series

Automatic Hardness Tester

Automatic hardness tester [GX-02 series] can perform the measurement with the operating speed, the measuring weight and the pressing-surface dimensions which are specified in JIS K 6253 "Determination of hardness - Vulcanized rubber and Thermoplastic rubber".

Features

- One-touch Measurement by Touch panel LCD.
- Display and Data output Peak hold, Timer hold, Median and Average.
- High adhesion between pressurized face and test piece by Alignment Unit.
- Measurement of TypeA, TypeD or TypeE by exchange the sensor.
- Calibration certificate can be issued.

Specifications

Standards	ISO 7619 / JIS K 6253 compliance
Minimum indication	0.1
System features	Peak-holding function, Timer-holding function (Timer value 0.5, 1 to 99sec), Tolerance judging function, Mean value outputting function (n=1 to 30), Data output (PC printer), Outer functions control output
Outside interface	RS-232C
Power	AC100~240V(ACAdapter)
Dimensions	170(W)×160(L)×470(H)mm
Weight	11kg(Including weight 1kg)
Sensor unit	Model : GSS-619 (Type A) GSS-620 (Type D) GSS-621 (Type E) Pressing-surface diameter : ϕ 18mm (ESS-621, type E is 127mm) Code length : 2m Dimensions : 50(W)×35(L)×124(H)mm Weight : 320g

Measuring modes : 3 types

- 1) Normal mode :
The maximum value is acquirable.
- 2) Test time mode :
The median value and mean value are calculated.
- 3) PC mode :
Operable by PC by using the dedicated software.

Features

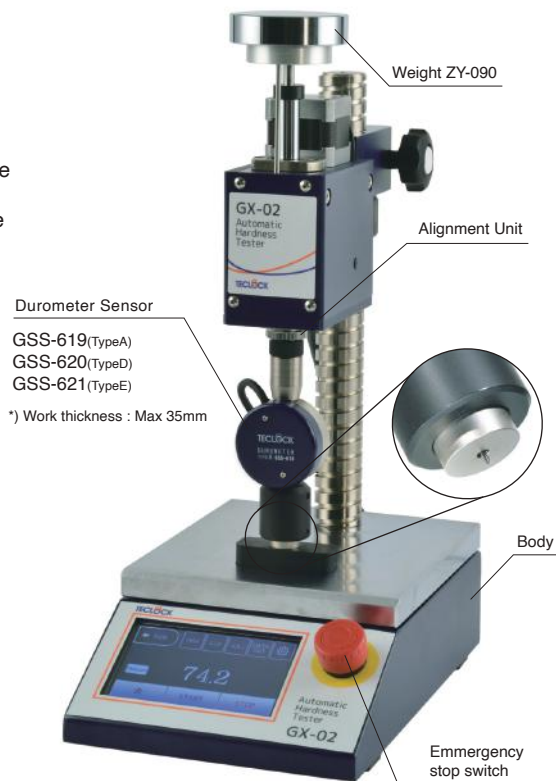
- Tolerance judging feature
- Data output format : RS-232C

System configuration

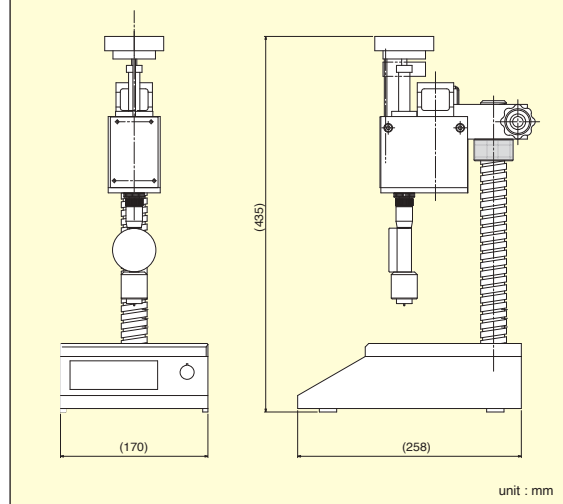
Model	Body	Weight	Sensor unit	Measuring object
GX-02A		ZY-090	GSS-619	Normal rubber & soft plastic
GX-02D	GX-02	ZY-090+ZY-128	GSS-620	Hard rubber & plastic
GX-02E		ZY-090	GSS-621	Soft rubber



New JIS compliance ISO compliance



Dimensions



Alignment Unit for Durometer Stand

As it can move front / back and left / right it is the new function which has materialized high adhesion between pressurized face of durometer and face to be measured of test piece. It is mounted to GX-610II, GS-612, GS-615 and all durometers including GX-02 type.



SmartTester GX-700 II NEW



Totally Automatic type IRHD·M method



- Innovative White-based New ID
- Big size Color LCD with Touch panel

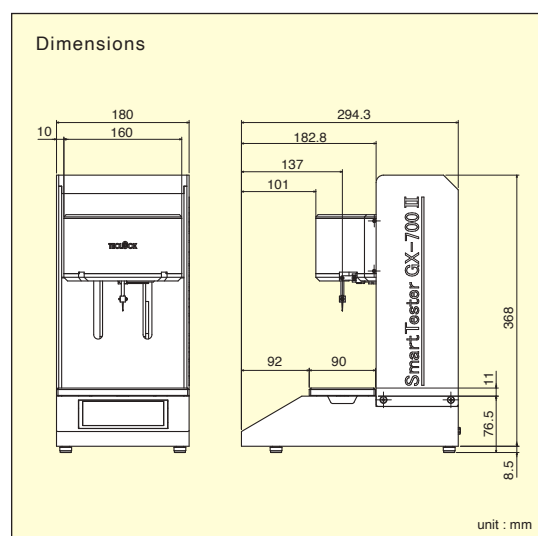
- Micro-hardness can be measured by 1/8 scale each durometer of type A, E, E2, OO and FO in addition to IRHD /M method.
- Hardness of O ring and small rubber parts can measured with totally automatic.
- Voice coil motor is adopted for load system. Friction and reproducibility of inner mechanism is improved, which is different from weight system.
- It is plug-in type that plunger (contact point) can be easily changed and recalibration on test method change is not needed.
- By LED lights, Easy to be visible the measuring point.
- As test piece table is wide, various measuring jigs can be set up.
- Calibration certificate can be issued.

GX-700II



Specifications

Hardness testing method	IRHD-M-method	Durometer Hardness	
Compliance standards	ISO 48/JIS K 6253	ISO 7619/JIS K 6253 TECLOCK Standards/ ASTM D 2240	
Measuring accuracy	±0.1 IRHD	Type A/E ±1	JIS K 6253
		Type E2/FO ±1	TECLOCK Standards
		Type OO ±2	ASTM D 2240
Measuring range	30~100 IRHD	0~100	
Minimum indication unit	0.1		
Measurement part movable distance	100mm		
Measurable test-piece dimensions	W=180 / D=90 / H=90		
Outside interface	USB		
Power	AC Adapter Input : AC100~240V, 50/60Hz, 1.1A / Output : DC24V, 1.9A		
Weight	15.5kg (with AC adapter)		
Accessories	PC application CD (for Windows 10)		
	PC connecting cable/AC adapter		
	Spare plunger (x1) (ZS-121) for IRHD		
Rubber specimen(option)	ZY-917 6 types set (w/Inspection table) —		



O Ring Measuring Device

This is the device for centering of O ring of which wire diameter is 0.5mm-10mm. The pin at stage center which fixes position of O ring slightly moves up/down and left/ right independently and fixes the position. In addition, it is possible to rotate it to an arbitrary position.

Specifications

Model	ZY-921
Stage dimensions	90×86mm
Applicable O-ring diameter	φ0.5~φ10mm
Weight	2.9kg



ZY-921

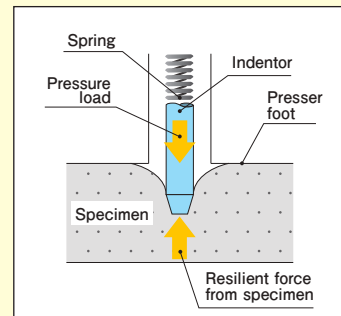


Model Selection of Durometer

There are many type of durometers based on spring force, contact point size and its shape. This is according to the international standard, in order to have the most accurate and the precise results with the several shape of works and those material characteristic. Teclock durometers are in comply with the international standards, but also have an own standard to measure the variety of materials. Please refer to the table below to choice the most suitable model.

Mechanism of the hardness measurement

Contact point with the pressurizing force gives deformed surface. Then, a work piece makes force against this force. Hardness means that when both pressurizing force and repulsive force are equivalent, measure the depth of indenter. The depth of indenter indicates from 0 to 100. This figure shows the values of hardness. The figure has no force unit, but only relative physical value.



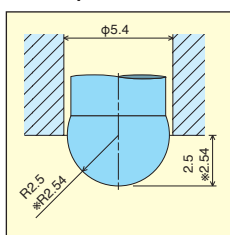
Note : If model number is the same, it means to apply the same specification.
ex : GS-719N and GS-719G are the same specification.

TYPE	TYPE	TYPE	TYPE	TYPE
FO	00	E2	SRIS E (AskerC)	0
GS-744	GS-754	GS-743	GS-701 GS-721 GS-621	GS-753
<ul style="list-style-type: none"> · Urethane foam · Shock absorb material for car sheet · Sponge for dish washer · Konjac 	<ul style="list-style-type: none"> · Ultra-soft rubber · Foam rubber · OA equipment roll · Chewing gum 	<ul style="list-style-type: none"> · Very soft rubber · Processed cheese · Cloth scroll · Chine clay · Sealant 	<ul style="list-style-type: none"> · Very soft rubber · Eraser · Film roll · Spinning roll · Foam rubber roll · Using for A20 less · Low hardness elastomer 	<ul style="list-style-type: none"> · Very soft rubber · Spinning roll · Leather · Cardboard · Polystyrene foam

Shape of Contact Point of Durometer

Teclock Durometer has 5 types of contact point shape. Besides, there are some different spring force types. Combination contact point surface and spring force, it can apply the most suitable durometer to a work piece. These shape and pressurizing force are referred to ISO and JIS standard.

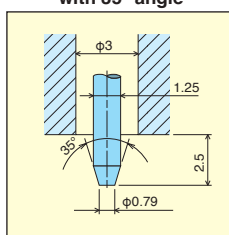
Hemisphere of SR5.08



GS-701
GS-721
GS-743

(Unit:mm)
*GS-701

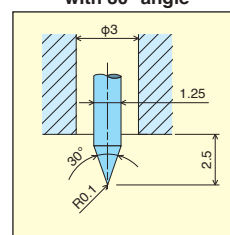
Truncated Cone of φ0.79 with 35° angle



GS-706
GS-709
GS-719
GS-751

(Unit:mm)

Conical Cone of R0.1 with 30° angle



GS-702
GS-720
GS-750

(Unit:mm)

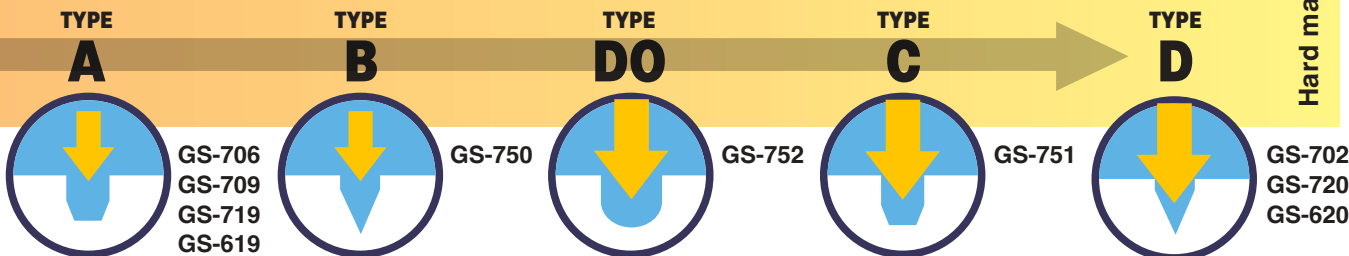


Comparison of Measured Value by Durometer

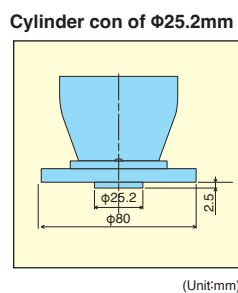
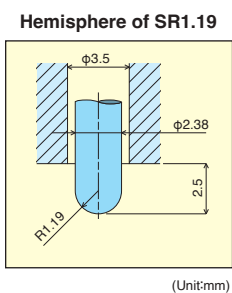
It is the comparison list of measured data by each durometer based on type A. As hardness values fluctuate owing to various factors temperature and humidity on measuring, dimension and shape, and vulcanizing condition in a certain range, it is impossible to verify complete relative relation between each type. However, refer to the list in right side for comparison value.

Soft → → Hard

TYPE A JIS K 6253 JIS K 7215	0 10 20 30 40 50 60 70 80 90 100
(old A) JIS K 6301	0 10 20 30 40 50 60 70 80 90 100
TYPE E JIS K 6253	0 20 30 40 50 60 70 80 90 100
TYPE SRIS JIS K 7312	0 20 30 40 50 60 70 80 90 100
TYPE E2 TECLOCK E2	0 30 40 50 60 70 80 90 100
TYPE D JIS K 6253 JIS K 7215	0 10 20 30 40 50 100
TYPE DO ASTM D 2240	0 10 20 30 40 50 60 70 80 90 100
TYPE O ASTM D 2240	0 20 30 40 50 60 70 80 100
TYPE OO ASTM D 2240	0 50 60 70 80 90 100
TYPE B ASTM D 2240	0 10 20 30 40 50 60 70 80 90 100
TYPE C ASTM D 2240	0 10 20 30 40 50 60 70 80 100



- General rubber elastomer
 - Rubber roll
 - Rubber roll
 - Tire
 - Rubber hose
 - Soft plastic
 - Using for D20 less
- Medium-hard rubber
 - Unglazed China clay
 - Wood
- Medium-hard rubber
 - Flooring and building
 - Car handle
- Hard rubber
 - Golf ball
 - Brake rubber
- Hard rubber
 - Plastic
 - Ebonite
 - Using for A90 or over
 - High hardness elastomer



The above table also refers to the digital types.

How to read table

Pressurizing Force to a work piece.
The arrow size above shows the strength of the pressurizing force. The biggest arrow shows the most pressurizing force which are type D, C and DO. The smallest arrows the minimum pressurizing force.

Type **A** Applied Models

Surface of pressurizing Force

Contact Point Shape

GS-706
GS-709
GS-719

Compliance with JIS K 6253 standard

For Hardness test of vulcanized or thermoplastic rubber

Analog
Digital
New JIS compliance
ISO compliance

This is Durometer to comply with JIS K 6253 (new JIS) standard established in 1993 for the purpose of conforming to ISO (International Standard Organization). Durometers consist of 3 types namely, Type A for medium hardness, Type D for high hardness and Type E for low hardness.

Type A tends to indicate higher value by 1~2 points compared with former Type A durometers. Type D is suitable for hard rubber having more than 90 hardness measured by type A durometer and Type E is suitable for soft rubber of which hardness is 20 and below measured by Type A durometers.

Standard Type



GS-719N
Type A Durometer
General rubber



GSD-719K
Type A Durometer
Digital type
With peak detection

Digital Durometer with Peak Hold Function

This is the model for which peak hold (Maximum value is held) function is mounted.

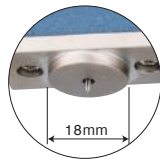
This is effective to measure hardness of Elastomer of which maximum value is unreadable due to relaxation phenomenon.

Minimum read value is 0.5 and it is a half of analog type.

Measured data can be treated as statistics by connecting with optional printer SD-763P.

Pressurized Face ϕ 18mm Durometer mounted to Stand

Pressurized face diameter of type A and type D durometer mounted to a stand is defined 18mm by JIS standard and ISO standard. ϕ 18mm type A(GS-719R) and type D (GS-720R) can be used as they are for measuring by pushing by hand.



GS-719R
Type A Durometer
Stand mounting compatible type
Peak pointer type



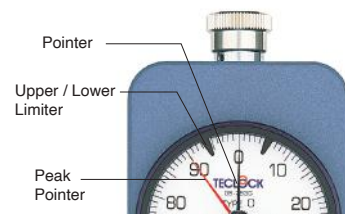
GSD-719K-R
Type A Durometer
Digital type
Stand mounting compatible type
Peak pointer type

Specifications

Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
Analog	GS-719N	Type A General rubber (Medium hardness)	JIS K 6253 ISO 7619 ISO 868 ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	200	50,820 JPY
	GS-719G	Type A(Peak Pointer Type) General rubber (Medium hardness)		550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	208	58,080 JPY
	GS-719R	Type A ϕ 18mm/stand combined General rubber (Medium hardness)		550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	213	64,130 JPY
	GS-720N	Type D Hard rubber (High hardness)		0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	2.50	200	50,820 JPY
	GS-720G	Type D(Peak Pointer Type) Hard rubber (High hardness)		0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	2.50	208	58,080 JPY
	GS-720R	Type D ϕ 18mm/stand combined Hard rubber (High hardness)		0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	2.50	213	64,130 JPY
	GS-721N	Type E. AO (High hardness) Soft rubber	JIS K 6253 ISO 7619	550-8050mN (56.1-821.1gf)	Hemisphere of SR2.50	2.50	200	55,660 JPY
	GS-721G	Type E(Peak Pointer Type) (High hardness) Soft rubber		550-8050mN (56.1-821.1gf)	Hemisphere of SR2.50	2.50	208	62,920 JPY
	GS-719P	Type A(Pocket Type) General rubber (Medium hardness)		JIS K 6253	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	100
Digital	GSD-719K	Type A General rubber, soft plastic	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	313	137,720 JPY
	GSD-720K	Type D Hard rubber, Plastic		0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	2.50	313	138,600 JPY
	GSD-721K	Type E(AO) Very soft rubber	JIS K 6253, ISO 7619	550-8050mN (56.1-821.1gf)	Hemisphere of SR2.50	2.50	313	138,600 JPY
	GSD-719K-R	Type A ϕ 18mm/Stand combined General rubber (Medium hardness)	JIS K 6253, ISO 7619 ISO 868, ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	320	147,840 JPY
GSD-720K-R	Type D ϕ 18mm/Stand combined Hard rubber (High hardness)	0-44450mN (0-4533gf)		Conical Cone of R0.1 with 30° angle	2.50	320	148,720 JPY	

Peak Pointer Type

Some of Rubbers, Elastomer' elastic body is not easily read the maximum value after firm contacting with a presser foot of durometer, due to the stress relaxation. The pointer indicates the descendent value but the peak pointer is holding the maximum measured value. The peak pointer type can easily read the maximum value efficiently. In case the pointer cannot be read directly due to some obstacles although the measuring can be done, the measured value can be confirmed from peak pointer after measuring. The upper / lower limiters equipped will be effectively used in tolerance judgment.



Deep Hole / Long Leg Type



In some cases, such as the measurement surface of uneven or with a narrow flat area and the bottom of deep hollow, it may be impossible to achieve the proper results because of the difficult contact of the presser foot. The Deep Hole (H) type and the Long Leg (L) type make such measurements possible with a small or long presser foot. Both are supplied with Peak Pointer and the upper/lower limiters. The Long Leg type meets also to DIN 53505 standard.

Analog Digital



GS-720H
Type D Durometer
Deep hole type
Peak pointer type



GS-719L
Type A Durometer
Long leg type
Peak pointer type



GSD-719K-H
Type A Durometer
Digital type
Deep hole type
With peak detection



GSD-719K-L
Type A Durometer
Digital type
Long leg type
With peak detection

Specifications

Model	Type	Application / Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Presser Foot Diameter(mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
Analog	GS-719H (Peak Pointer type)	General rubber / Deep hole type (narrow hole)	JIS K 6253, ISO 7619 ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	ϕ 12	2.50	140	70,180 JPY
	GS-719L (Peak Pointer type)	General rubber / Long leg type (thick hole)	JIS K 6253, ISO 7619 ASTM D 2240, DIN 53 505	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	ϕ 18	2.50	360	82,280 JPY
	GS-720H (Peak Pointer type)	Hard rubber / Deep hole type (narrow hole)	JIS K 6253, ISO 7619 ASTM D 2240	0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	ϕ 12	2.50	140	70,180 JPY
	GS-720L (Peak Pointer type)	Hard rubber / Long leg type (thick hole)	JIS K 6253, ISO 7619 ASTM D 2240, DIN 53 505	0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	ϕ 18	2.50	360	82,280 JPY
Digital	GSD-719K-H (Peak Pointer type)	General rubber / Deep hole type (narrow hole)	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	ϕ 12	2.50	194	138,930 JPY
	GSD-719K-L (Peak Pointer type)	General rubber / Long leg type (thick hole)	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240, DIN 53 505	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	ϕ 18	2.50	380	165,330 JPY
	GSD-720K-H (Peak Pointer type)	Hard rubber / Deep hole type (narrow hole)	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240	0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	ϕ 12	2.50	194	139,810 JPY
	GSD-720K-L (Peak Pointer type)	Hard rubber / Long leg type (thick hole)	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240, DIN 53 505	0-44450mN (0-4533gf)	Conical Cone of R0.1 with 30° angle	ϕ 18	2.50	380	166,210 JPY

Mounting impossible to stand with all varieties.

Pocket Type

Durometer of pocket type is convenient to carry.

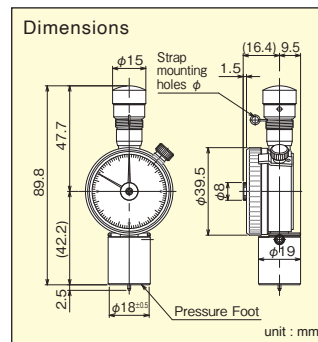
Analog **New JIS compliance**



GS-719P
GS-709P
Type A Durometer
Peak pointer type



Comparison with standard type. (Left)



※Dimensions of the GS-755 is page 145. GS-779G is Page 146.

Specifications

Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
GS-719P (Peak Pointer type)	TypeA	General rubber (Medium hardness)	JIS K 6253	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	100	52,030 JPY
GS-709P (Peak Pointer type)	TypeA	Soft plastic, General rubber	JIS K 7215	549-8061mN (56-822gf)				52,030 JPY
GS-755	TypeOOO	Ultra soft rubber Thin Sheet	ASTM D 2240	203-1111mN (20.7-113.3gf)	Hemisphere of SR6.35	1	125	92,950 JPY
GS-779G	Type A approximate	Hardness	—	388-1288mN (9-131gf)	ϕ 0.35	1	100	79,860 JPY

Compliance with JIS K 7215 standard

Durometers for hardness test of plastic

Analog Digital

This standard is prescribed by plastic industry in Japan apart from testing method of hardness of rubber. This is basically equal to Durometer of JIS K 6253, as only its round up method of spring load value etc. is different. But we distinguish model name as another Durometer according to the view of conformity to standard.



GS-702N

Type D Durometer
Plastics
Hard rubber



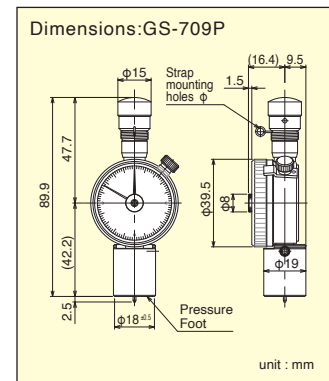
GS-709N

Type A Durometer
General rubber
Soft plastic



GS-709P

Type A Durometer
General rubber
Soft plastic



Specifications

	Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
Analog	GS-702N	Type D	Plastics/Hard rubber	JIS K 7215	0-44483mN (0-4536gf)	Conical Cone of R0.1 with 35° angle	2.50	200	50,820 JPY
	GS-702G	Type D (Peak pointer type)	Plastics/Hard rubber		ISO 868	0-44483mN (0-4536gf)	Conical Cone of R0.1 with 35° angle	2.50	208
	GS-709N	Type A	Soft plastic/General rubber	ASTM D 2240	549-8061mN (56-822gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	200	50,820 JPY
	GS-709G	Type A (Peak pointer type)	Soft plastic/General rubber		549-8061mN (56-822gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	208	58,080 JPY
	GS-709P	Type A (Pocket type)	Soft plastic/General rubber	JIS K 7215	549-8061mN (56-822gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	100	52,030 JPY
Digital	GSD-719K	Type A	Soft plastic/General rubber	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240	550-8050mN (56.1-821.1gf)	Truncated Cone of ϕ 0.79 with 35° angle	2.50	313	137,720 JPY
	GSD-720K	Type D	Plastics/Hard rubber		0-44450mN (0-4533gf)	Conical Cone of R0.1 with 35° angle	2.50	313	138,600 JPY

Compliance with JIS K 7312 standard

Durometers for hardness test of plastic

Analog Digital

Standard about physical test method of polyurethane Elastomer. One of the test items is hardness test and rubber industry generally calls type A durometer "shore-A" and type D durometer "shore- D". In addition, type C for low hardness range is called ASKER and GS-701N(G) is the same product ASKER-C. It complies with hardness test of JIS S 6050 "Plastic eraser ". Furthermore, SRIS 0101 (ex Society of Rubber Industry, Japan standard of Measure) which was the base of these standard was already discontinued, but only type name is remained.



GS-701N

Type C (ASKER)
Soft rubber
for Windings yarn

Specifications

	Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
Analog	GS-701N	TypeC	Soft rubber, Foam rubber Eraser, Windings yarn	JIS K 7312	539-8385mN (55-855gf)	Hemisphere of SR5.08	2.54	200	50,820 JPY
	GS-701G	TypeC			JIS S 6050	539-8385mN (55-855gf)	Hemisphere of SR5.08	2.54	208
Digital	GSD-701K	TypeC			539-8385mN (55-855gf)	Hemisphere of SR5.08	2.54	313	137,720 JPY

Compliance with ASTM D 2240 standard



Durometers for hardness test of rubber characteristic

Analog Digital

ASTM (American Society for Testing and Materials) is historically old and various types of durometers are prescribed. Teclock provides all of this ASTM durometers for the usage of hard material application to ultra soft material application in our line up.



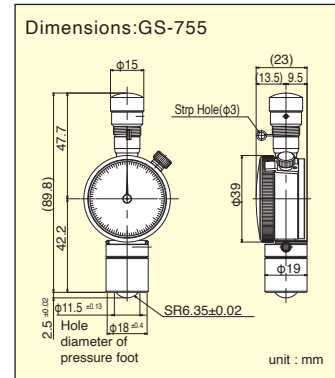
GS-750G
Type B Durometer
Medium-hard rubber



GS-754G
Type OO Durometer
Very soft rubber



GS-755
Type OOO Durometer



Specifications

	Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height (mm)	Weight (g)	Suggested List Price
Analog	GS-750G	Type B (Peak Pointer type)	Medium-hard rubber	ASTM D 2240	550-8050mN (56.1-821.1gf)	Conical corn of R 0.1 with 30° angle	2.50	208	62,920 JPY
	GS-751G	Type C (Peak Pointer type)	Hard rubber		0-44450mN (0-4533gf)	Truncated cone of φ 0.79 with 35° angle	2.50	208	62,920 JPY
	GS-752G	Type DO (Peak Pointer type)	Medium-hard rubber		0-44450mN (0-4533gf)	Hemisphere of SR 1.19	2.50	208	62,920 JPY
	GS-753G	Type O (Peak Pointer type)	Soft rubber		550-8050mN (56.1-821.1gf)	Hemisphere of SR 1.19	2.50	208	70,180 JPY
	GS-754G	Type OO (Peak Pointer type)	Very soft rubber		203-1111mN (20.7-113.3gf)	Hemisphere of SR 1.19	2.50	208	70,180 JPY
	GS-755	Type OOO	Very soft rubber		203-1111mN (20.7-113.3gf)	Hemisphere of SR 6.35	2.50	125	92,950 JPY
Digital	GSD-750K	Type B	Medium-hard rubber		550-8050mN (56.1-821.1gf)	Conical corn of R 0.1 with 30° angle	2.50	313	149,930 JPY
	GSD-751K	Type C	Hard rubber		0-44450mN (0-4533gf)	Truncated cone of φ 0.79 with 35° angle	2.50	313	149,930 JPY
	GSD-752K	Type DO	Medium-hard rubber		0-44450mN (0-4533gf)	Hemisphere of SR 1.19	2.50	313	149,930 JPY
	GSD-753K	Type O	Soft rubber		550-8050mN (56.1-821.1gf)	Hemisphere of SR 1.19	2.50	313	149,930 JPY
	GSD-754K	Type OO	Very soft rubber	203-1111mN (20.7-113.3gf)	Hemisphere of SR 1.19	2.50	313	149,930 JPY	

TECLOCK Original Standard Durometer

Analog Digital



GS-743G
Type E2 Durometer
Soft rubber



GS-744G
Type FO Durometer
Soft styrene foam



Hardness is measured by placing GS-744G on the sponge sheet. Dispersion of polystyrene level can be judged.

This is available as TECLOCK original standard based on customers' requirement, even though they are not prescribed in JIS or ISO. Type E 2 durometer for soft rubber with around half of spring load value of Type E, and Type FO to measure hardness of polystyrene sponge for the level of sponge for washing dishes are available.

Specifications

	Model	Type	Application/Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height (mm)	Weight (g)	Suggested List Price
Analog	GS-743G	Type E2 (Peak Pointer type)	Soft rubber	TECLOCK E2	550-4300mN (56.1-438.6gf)	Hemisphere of SR2.50	2.50	208	62,920 JPY
	GS-744G	Type FO (Peak Pointer type)	Soft styrene foam	TECLOCK FO	550-4300mN (56.1-438.6gf)	Cylindrical cone of φ 25.2	2.50	500	82,280 JPY
Digital	GSD-743K	Type E2	Soft rubber	TECLOCK E2	550-4300mN (56.1-438.6gf)	Hemisphere of SR2.50	2.50	313	137,720 JPY
	GSD-744K	Type FO	Soft styrene foam	TECLOCK FO	550-4300mN (56.1-438.6gf)	Cylindrical cone of φ 25.2	2.50	500	165,330 JPY

Simplified Micro-Hardness Tester for Thin Sheet Hardness

This is simplified micro-hardness tester which measures hardness of thin sheet such as rubber and elastomer. Height of indenter is 1mm that is 1per 2.5 of that of normal durometer. It is effective for dispersiveness of sheet hardness and its relative comparison. It is original standard of Teclock and designed so as to obtain the value similar to type A durometer.

Analog

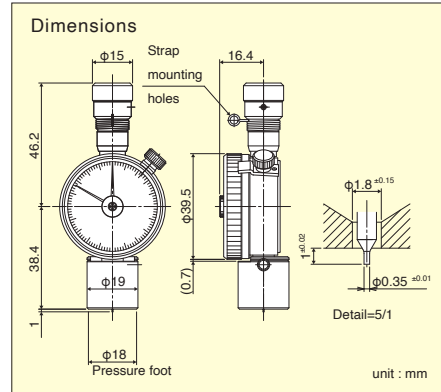


GS-779G

Peak pointer type

Specifications

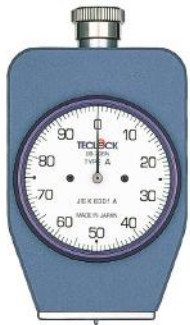
Model	Type	Spring Load Value 0-100	Indenter Shape(mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
GS-779G	Type A approximate	88-1288mN (9-131gf)	φ0.35	1	100	79,860 JPY



Compliance with JIS K 6301 standard

Vulcanized Rubber Physical Test (discontinued in 1998 August)

Analog **Digital**



GS-706N

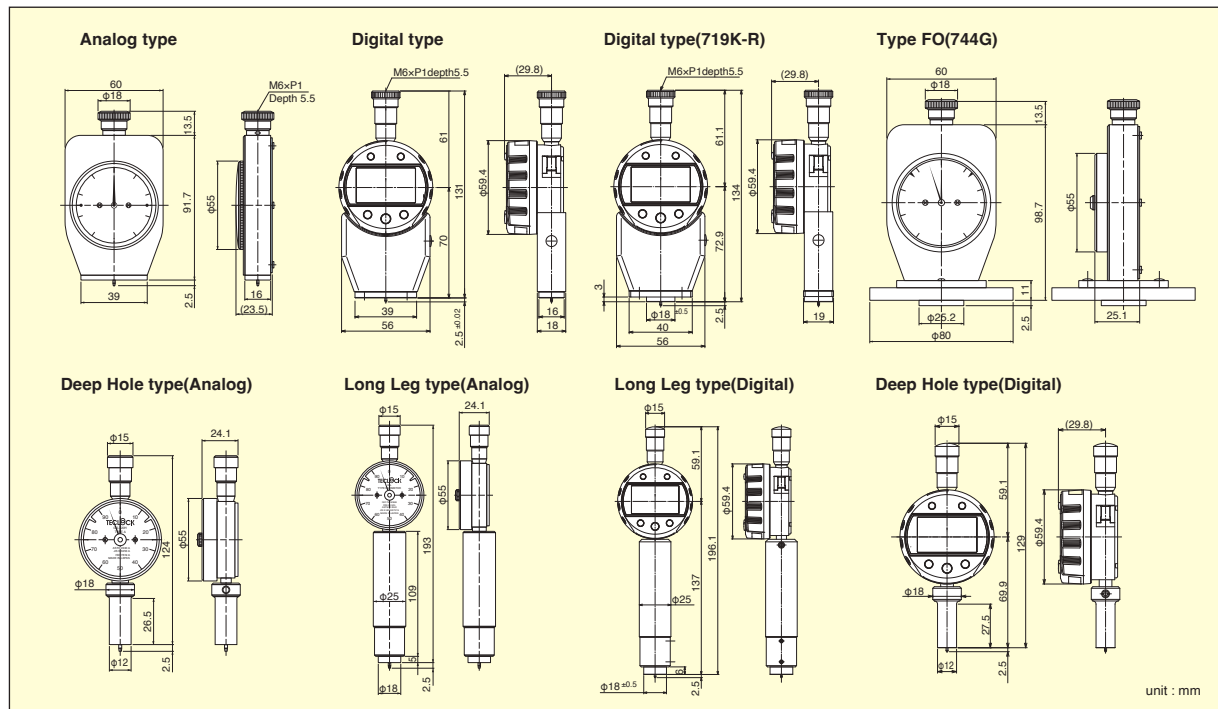
JIS A (old type)
General rubber

JIS K 6301 was established in 1950 and had sustained base of rubber industry of our country but was discontinued in 1998 because it did not comply with ISO and also JIS K 6253 was prescribed on its behalf. However, It had been used for 60 years as "Rubber hardness tester" and even now it is used as test data between certain parties in charge with mutual consensus although movement to new JIS has progressed and standard is discontinued. There are 2 models such as Spring type A and type C for hard rubber.

Specifications

Model	Type	Application/ Materials	Conform Standards	Spring Load Value 0-100	Indenter Shape (mm)	Indenter Height(mm)	Weight (g)	Suggested List Price
GS-706N	JIS A(old type)	General rubber	JIS K 6301 Spring type A	539-8385mN (55-855gf)	Truncated Cone of φ 0.79 with 35° angle	2.54	200	50,820 JPY
GS-706G	Type A(old type) Peak Pointer type	General rubber	JIS K 6301 Spring type A	539-8385mN (55-855gf)	Truncated Cone of φ 0.79 with 35° angle	2.54	208	58,080 JPY
GSD-706K	Type A(old type)	General rubber	JIS K 6301 Spring type A	539-8385mN (55-855gf)	Truncated Cone of φ 0.79 with 35° angle	2.54	313	137,720 JPY

Dimensions



Durometer Standard Table

Name of standard		JIS K 6253-2012	JIS K 6301-1995-1998 Abolition
Presser foot dimension		TypeA More than 12mm(ϕ 8.0, 5mm for Stand)	TypeA More than 14mm ϕ Note2
Indenter shaft diameter			
Indenter tip diameter			
Indenter tip angle			
Indenter amount exceeding from presser foot			
Weight at 0		0mN(0gf)	539.5mN(55gf)
Weight at 100		44.50mN(4.538gf)	8.050mN(821.1gf)
Load allowance value accuracy/indicating tolerance value		$\pm 7.5mN(8.16gf)$	$\pm 20gf$
Other standards		ASTM D 2240 ISO 7619	
Test pieces		More than 6mm thickness	More than 10mm thickness
Measuring position		More than 12mm from edge face	More than 12mm from edge face
Time to read		Vulcanized rubber : 15sec, Thermoplastic rubber : 15sec, or after regulating time	Read at once (Or after regulating time)
Number of measurement and data summary		5-points median more than 6mm off	5-points average value
Weight of constant pressure weight		1 $\frac{1}{8}$ kg	1kg
Temperature condition		one hour or more in the condition by JIS K 6250, ex. 23 \pm 2°C	20-30°C/One hour
Acclimate time of specimen			
Use range		A20-90 (In case of A90 or more, use Type D)	A>70 Use C type
Suitable specimen to the standards		Normal Rubber(Medium hard)	C type is preferable for range of 30-90
Our original durometers		GS-719N, 619R	Hard Rubber
Peak Pointer		GS-720N, 620R	Normal Rubber
Our original digital durometers		GS-719G, 619G R-G	GS-708N
		GS-720G, 620G R-G	GS-703N
		GSD-719KSeries	GS-703G
		GSD-720KSeries	GSD-706K

*Note1 ISO 7619 is referred to as a type AO *Note2 For stand 500mm² or more

Name of standard		JIS K 7215-1986	JIS S 6050 / JIS K 7312
Presser foot dimension		TypeA More than diameter 12mm, diameter 3 ^{+0.05} mm hole Center	TypeD About 14 \times 50mm, Approx. 5.2mm hole in Center
Indenter shaft diameter			
Indenter tip diameter			
Indenter tip angle			
Indenter amount exceeding from presser foot			
Weight at 0		5.49mN(56gf)	0.54N(55.1gf)
Weight at 100		8.061mN(822gf)	8.39N(855.5gf)
Load allowance value accuracy/indicating clearance value		$\pm 76mN(\pm 8gf)$	$\pm 8gf$
Other standards		ASTM D 2240 / ISO 868 (SHORE A)(DIN 53 505)	JIS S 6050 (Plastics Erasers)
Test pieces		6mm or more, 2mm acceptable for HDD 40 pr above	More than pressurized surface
Measuring position		12mm or more from edge	More than 10mm
Time to read		1sec or less (Time to be specified for over 1sec)	
Number of measurement and data summary		5 or preferably 10meas. at 6mm or more	At first weighing and 30sec later
Weight of constant pressure weight		Approx. 1kg	Average value of 3initial and 30sec later measurement, JIS S 6050
Temperature condition		23 \pm 2°C	Average value of 5initial and 30sec later measurement, JIS K 7312
Acclimate time of specimen		88h (Time can be shortened if measured value does not vary)	1kg
Use range		As a rule, use in range 20-90	20 ⁺⁰ /1h
Suitable specimen to the standards		Plastic (Plastic Film, Tape and Foam Plastic Excludes) (Usable for Elastomer)	Expanded rubber
Our original durometers		GS-709N	GS-701N
Peak Pointer		GS-709G	GS-701G
Our original digital durometers		GSD-719KSeries	GSD-701K
		GSD-720KSeries	

Name of standard		ASTM D 2240-05		
Presser foot dimension		TypeB	TypeC	TypeDO
Indenter shaft diameter				
Indenter tip diameter				
Indenter tip angle				
Indenter amount exceeding from presser foot				
Weight at 0		550mN(56.1gf)	0mN(0gf)	550mN(56.1gf)
Weight at 100		8.050mN(821.1gf)	44.450mN(4.533gf)	8.050mN(821.1gf)
Load allowance value accuracy/indicating tolerance value		$\pm 0.075N$	$\pm 0.4445N$	$\pm 0.075N$
Other standards				
Test pieces		Flat area dimension	More than radius 6mm than	More than radius 6mm than
Measuring position		Thickness	More than 6mm	More than 6mm
Time to read		Time to read	More than 12mm (Length and Width)	Within 1-sec.
Number of measurement and data summary		Weight of constant pressure weight	5-points of average value or medium 6mm off	
Temperature condition		Acclimate time of specimen	1kg Recommendation	1kg
Use range			23 \pm 2°C	
Suitable specimen to the standards			Further, Type A, Type D and Type E are defined by ASTM D 2240. So, Type M, too, then Teclock does as a special specification.	
Our original durometers		Standard	Rubber, Cellular, Elasticity material, Thermoplastic elastomers, Hard plastic, Soft plastic	
Peak Pointer		GS-750G	GS-751G	GS-753G
Our original digital durometers		GSD-750K	GSD-751K	GSD-753K
				GSD-754K
				GSD-754K

Name of standard		Teclock standard	
Presser foot dimension		Type E2	Type FO
Indenter shaft diameter			
Indenter tip diameter			
Indenter tip angle			
Indenter amount exceeding from presser foot			
Weight at 0		550mN(56.1gf)	550mN(56.1gf)
Weight at 100		4.300mN(438.6gf)	4.300mN(438.6gf)
Load allowance value accuracy/indicating clearance value		0.04N($\pm 4gf$)	0.04N($\pm 4gf$)
Other standards			
Test pieces		Flat area dimension	More than pressurized surface
Measuring position		Thickness	More than 10mm
Time to read		Time to read	Within 1-sec. (or after regulating time)
Number of measurement and data summary		Weight of constant pressure weight	5-points median more than 6mm off
Temperature condition		Acclimate time of specimen	23 \pm 2°C
Use range			
Suitable specimen to the standards			Foam sponge, Polyurethane foam
Our original durometers		Standard	
Peak Pointer		GS-749G	GS-744G
Our original digital durometers		GSD-749K	GSD-744K

SmartTester GX-610 II

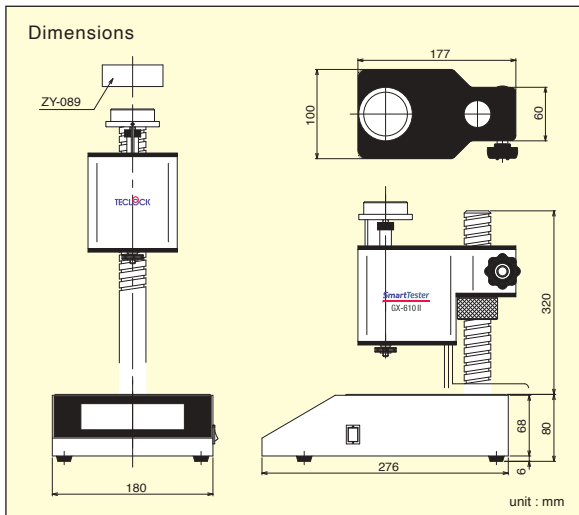
Durometer stand mounted VFD with touch panel

New JIS compliance

ISO compliance

Features

- Large and easy-to-see display.
- Easy-to-understand operation with touch panel.
- Accurate and repeatable descent speed controlled by stepping motors.
- High adhesion between pressurized face and test piece by Alignment Unit.
- Measurement of TypeA, TypeD or TypeE by exchange the sensor and weight.
- Calibration certificate can be issued.



* The durometer is option.



Specifications

Moving-down speed	1.0~20.0mm/sec (Every 0.1mm/sec setting possible)
Pressing mass	Unit mass 346g(With spring load) Standard weight(ZY-089) 487.5g
Display brightness	Following 1.0(A)
Current consumption	W180xL276xH400(mm)
Dimensions	Input AC100-240(V)Output DC 24(V)
Weight	Body 11.4(kg)/AC Adapter 0.2(kg)
Operating temperature	10 - 30(°C)
Storage temperature	-10 - 50(°C)
AC Adapter	8-step setting possible
Touch sound	Hi/Lo setting possible
Touch sensitivity	Yes/No setting possible
Suggested List price	363,000 JPY

Adaptive Durometer

Stand	Durometer			Weight for Load	
	Type	Durometer ex.	Load	Weight Code No.	
GX-610II	Analog	"A,B,E, AskerC,O,Old A"	GS-706,709,719 etc. Recommendation:GS-719R	for 1kg	ZY-089(Accessory)
	Digital	GSD-719K-R etc.			ZY-090(Optional)
	Analog	"D,ASTM C, DO, Old JIS C"	GS-702,720 etc. Recommendation:GS-720R	for 5kg	ZY-089(Accessory)+ ZY-128(Optional)
	Digital	GSD-720K-R etc.			ZY-090(Optional)+ ZY-128(Optional)
GS-612	Analog	"A,B,E, AskerC,O,Old A"	GS-706,709,719 etc. Recommendation:GS-719R	for 1kg	ZY-089(Accessory)
	Digital	GSD-719K-R etc.			ZY-090(Optional)
	Analog	"D,ASTM C, DO, Old JIS C"	GS-702,720 etc. Recommendation:GS-720R	for 5kg	ZY-089(Accessory)+ ZY-128(Optional)
	Digital	GSD-720K-R etc.			ZY-090(Optional)+ ZY-128(Optional)
GS-615	Analog	"A,B,E, AskerC,O,Old A"	GS-706,709,719 etc. Recommendation:GS-719R	for 1kg	ZY-078(Accessory)
	Digital	GSD-719K-R etc.			ZY-079(Optional)
	Analog	"D,ASTM C, DO, Old JIS C"	GS-702,720 etc. Recommendation:GS-720R	for 5kg	ZY-078(Accessory)+ ZY-128(Optional)
	Digital	GSD-720K-R etc.			ZY-079(Optional)+ ZY-128(Optional)

Measuring Stand for Durometer

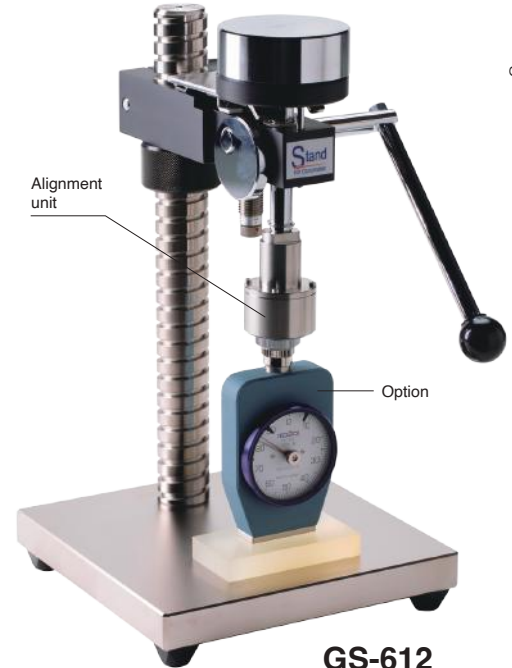
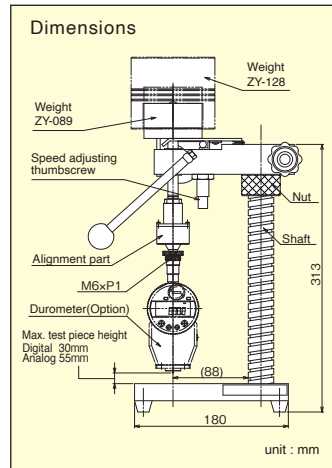


In case of measuring with durometer by pushing by hand, measuring values vary in some degree due to individual difference. Therefore, Measuring stand is materialized as measuring method for high reproducibility, which is prescribed in JIS and ISO.

New JIS compliance

GS-612 Manual Operation type Durometer Stand with Speed Controller

- Speed controller with high reliability is adopted for moving down speed adjustment unit.
- Alignment unit which realizes high contact between indenter (contact point) of durometer and test piece is mounted.
- 65mm for analog and 40mm for digital are obtained for possible measuring range.
- Shaft with square thread is adopted that can prevent holder falling down and moving up and down.
- 1kg can be measured by type A and type E durometer as they are.
- Measuring by type D needs optional weight ZY-128 for measuring 5kg.. Digital durometer GSD series needs optional weight ZY-090 for measuring 1kg..
- Calibration certificate of mass (with durometer) can be issued, which are prescribed in ISO / JIS.



GS-612

Mass	8.5kg
Model	Suggested List Price
GS-612	203,280 JPY
ZY-128	45,980 JPY
ZY-090	14,770 JPY



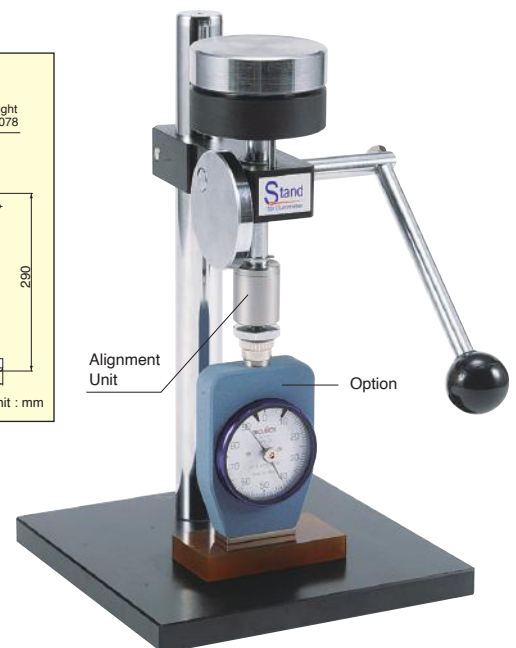
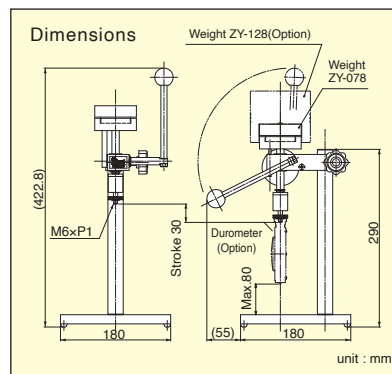
Weight ZY-128 (Option)



Weight ZY-089 (Accessory)

GS-615 Manual Operation type Durometer Stand

- Hardness can be measured by durometer with load prescribed by JIS by mounting durometer and manual operation.
- Adopting cam has realized easy operation and cost performance.
- Alignment unit which realizes high contact between indenter (contact point) of durometer and test piece is mounted.
- 1kg can be measured by type A and type E durometer.as they are. Measuring by type D needs optional weight ZY-128 for measuring 5kg.. Digital durometer GSD series needs optional weight ZY-079 for measuring 1kg..
- Calibration certificate can be issued (Operation speed certificate can not be issued.).



GS-615

Mass	3.9kg
Model	Suggested List Price
GS-615	90,530 JPY
ZY-128	45,980 JPY
ZY-079	14,770 JPY



Weight ZY-128 (Option)



Weight ZY-078 (Accessory)

Durometer Periodical Inspection / Calibration

Durometer is a testing machine. In case that it corresponds to "Monitoring Machine" and "Measuring Machine" of ISO 9001 (JIS G 9001), controlling machines along with it is needed. Teclock is one of a few manufacturers of durometer which has obtained the authentication of ISO9001 and can originally issue 3 kinds of traceability system diagram, calibration certificate and inspection report that are needed for calibration documents. In addition, Teclock can issue 3 kinds of documents for durometer tester and indenter height gauge, that are needed for internal inspection. Use these for control based on internal calibration standard.

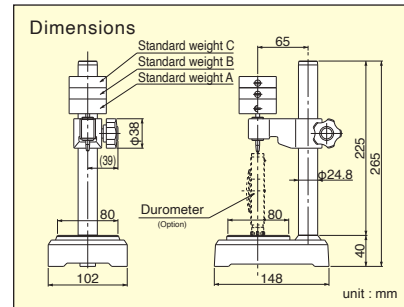
Durometer Tester



GS-607

Durometer is optional.

This is inspection machine which simply checks spring load value of analog type durometer. Putting defined load with 3 pieces of standard weight to the inverted durometer and inspecting whether graduation of 25, 50 and 75 correctly point out. Calibration certificate can be issued. (Digital type durometer and other makes products can not be calibrated.)
In addition, in the standard of overseas and also domestic, inspection method by using mechanism of even balance and with normal position of durometer is introduced.



Specifications

Code.No.	Applicable Durometer	Weight(kg)	Suggested List Price
GS-607	GS-701N/GS-701G/GS-706N/GS-706G	3.7	78,650 JPY
GS-607A	GS-709N/GS-709G	3.7	94,820 JPY
GS-607B	GS-719N/GS-719G/GS-721N/ GS-721G/GS-750G/GS-753G	3.7	94,820 JPY
GS-607C	GS-743G	3.7	94,820 JPY

Type D durometer for tester does not manufacture. Calibration certificate is Available.

Indenter Extension Gauge



ZY-119

ZY-120

Height of indenter (contact point) of durometer is simply checked. ZY-119 is for JIS K 6301 and ZY-120 is for JIS K 6253. Products of other makers can be checked.

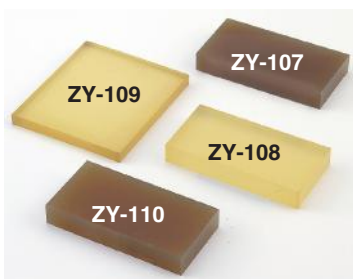
Specifications

Code No.	Indenter Height (mm)	50DEG	2DEG	Applicable Durometer	Suggested List Price
ZY-119	2.54 type	1.27mm	2.489mm	GS-701N/G, 706N/G	19,360 JPY
ZY-120	2.5 type	1.25mm	2.45mm	GS-GSD-719, 720 Series	19,360 JPY

Calibration certificate is possible.

Rubber Piece for Durometer Measuring

This is not rubber test piece. It is used for easy checking to find out failure of durometer. Measuring hardness when it is purchased and use it for daily control of durometer.



for Durometer



for IRHD Tester

Specifications for Durometer

Code No.	Type	Dimension(mm)	Applicable Durometer	Suggested List Price
ZY-107	nearly A50	40x80x12 Thickness	TypeA (GS,GSD-719J Series)	6,660 JPY
ZY-108	nearly A80	40x80x12 Thickness	TypeA (GS,GSD-719J Series)	6,660 JPY
ZY-109	nearly D40	70x80x7 Thickness	TypeD (GS,GSD-720J Series)	6,660 JPY
ZY-110	nearly E70	40x80x12 Thickness	TypeE (GS,GSD-721J Series)	6,660 JPY

Specifications for IRHD Tester

Code No.	Hardness IRHD	Dimension (mm)	Color	Material	Suggested List Price
ZY-917	Set of 6 pcs. (ZY-080~ZY-085)				50,600 JPY
ZY-080	40±5	25x25x2	Blue	Silicon	8,800 JPY
ZY-081	50±5		Black	Silicon	8,800 JPY
ZY-082	60±5		Yellow	Silicon	8,800 JPY
ZY-083	70±5		Bengara	Silicon	8,800 JPY
ZY-084	80±5		Gray	Silicon	8,800 JPY
ZY-085	90±5		Transparent	Urethane	9,900 JPY

Precautions on use of Durometer (Rubber / Plastic hardness measurement)

1. Confirmation of performance

Please confirm requested standard and type of durometer on the occasion of receiving. Please refer to the standard of JIS K 6253, K 7215, K 6301, ISO 7619, ISO 868 and ASTM D 2240 in detail.

2. Test environment

- (1) Test environment for measuring samples is prescribed at internal and external standard as " $23\pm 2^{\circ}\text{C}$, humidity $50\pm 5\%$ ".
- (2) please avoid using it where dust and oil mist attach to it.

3. Precaution on use

- (1) Check before using
 1. Confirm whether operation is smooth.
 2. Confirm whether accretion is on pressurized surface or indenter.
 3. Confirm whether the indicator indicates "0 point".
- (2) Never disassemble device and loose screws.
- (3) Do not give the products any shock by being dropped or excessive load.
- (4) Keep the products away from direct sun light, excessive high or low temperature, and high humidity or dust. Avoid using and storing the products under the circumstances of water or oil.
- (5) Do not press the products to hard samples like glass or metals excepting for the purpose of checkup and inspection.
- (6) Do not clean with organic detergent (thinner or benzine) and not put oil onto the products.
- (7) Do not apply a load to the indenter in right angle. Do not hit the products with a hard item.

4. Maintenance

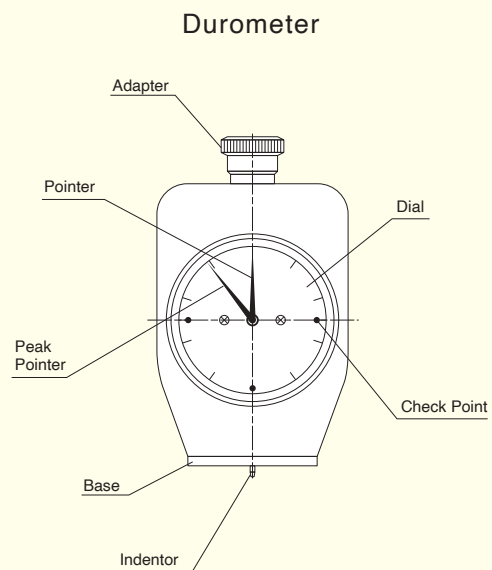
- (1) In case that outer dial can not be read due to dirt of crystal, please wipe stains from the crystal by using a dry cloth or a cloth dampened with neutral detergent.
- (2) In case that some sort of defect is observed for indicator, indenter and spring load value by check up and repair or adjustment is needed, please inform the sales outlet where the products are bought. Products repaired or adjusted by parties not authorized by TECLOCK can not be warranted by us.

5. Periodical inspection

Durometers are needed to be inspected during a certain period, which depends on usage frequency. Especially, in case that instruments are controlled by "inspection, measuring and test instruments " of ISO 9000 series, it is important element.

- (1) Indenter height : Indicator should indicate 0 on free condition. Then it is checked whether indicator is in 100 by pressing pressurized surface onto hard and flat and smooth surface. Meanwhile, be careful so that indenter edge shape of Type D durometer is not changed.
- (2) Indenter shape : It is checked by measuring microscope whether dimension and shape of indenter edge is in the permissible value of standard. In case that there is abrasion or damage , indenter needed to be changed.
- (3) Spring force : It is checked by giving load against each indicated value whether indicator correctly indicates. Please use durometer tester "GS-607 series" to check load of ● mark check point of 25, 50 and 75 on outer dial. Permissible error of indicated value is ± 1 .

Nomenclature





“Duro” of Durometer means “hardness”

Durometers was launched as one of the devices from Shore the US measurement tools company in the early years of the 1900. “Duro” comes from Latin, and means “hardness” as etymologically same with “Duralumin” of aluminum alloy. The original device from Shore used to be used as the Durometer standard, therefore Shore A is still remained as one of the popularized names of Type A.

Since then, Durometers have been used in all over the world. In Japan, Durometers were called “Rubber Hardness Tester” in general. The primary durometers had scales counted by double width size than current durometers. Nowadays, the data of hardness is recognized as high importance issue. Therefore, the standard of durometers has been getting more stringent than it used to be.

