Analog Digital

Digital/Analog Durometer compliance with ISO, ASTM, DIN and JIS

Method for determining hardness of vulcanized rubber and thermoplastic rubber

GS-702N

Type D Durometer

for Plastic/Hard rubber

GS-709N

Type A Durometer

for Soft plastic/general rubber

These durometers comply with ISO, ASTM, DIN and JIS K 7215. These durometers are designed for JIS 7215 standards which are used in Japanese plastic industry. These durometers are basically same with JIS K6253 new JIS standard, and only sphere method of spring is different. Teclock is making as another durometers from point of compartible JIS standard.

☐ Specification

	Model	Type	Application	Applicable Standards	Spring Load Hardness 0-100	Indenter shape	Indenter Height (mm)	Weight (g)
Analog	GS-702N	D	Plastic/Hard Rubber	JIS K 7215 ISO 868 ASTM D 2240	0-44483mN (0-4536gf)	R0.1 with 30°angle Conical Cone	2.50	200
Analog	GS-702G	D	Plastic/Hard Rubber		0-44483mN (0-4536gf)	R0.1 with 30°angle Conical Cone	2.50	208
Analog	GS-709N	A	Soft Plastic/General Rubber		549-8061mN (56-822gf)	ϕ0.79 with 35°angle Truncated Cone	2.50	200
Analog	GS-709G	A	Soft Plastic/General Rubber		549-8061mN (56-822gf)	ϕ0.79 with 35°angle Truncated Cone	2.50	208
Analog	GS-709P	A	Soft Plastic/General Rubber	JIS K 7215	550-8050mN (56.1-821.1gf	ϕ0.79 with 35°angle Truncated Cone	2.50	125
Digital	GSD-719J	A,digital	Soft Plastic/General Rubber	JIS K 6253, JIS K 7215, ISO 7619, ISO 868, ASTM D 2240	549-8061mN (55-822gf)	ϕ0.79 with 35°angle Truncated Cone	2.50	313
Digital	GSD-720J	D,digital	Hard Rubber/Plastic		0-44450mN (0-4533gf)	R0.1 with 30°angle Conical Cone	2.50	313

*N: standard *G: with Peak Pointer *P: Pocket type *J: Peak hold function *Indenter Height: 2.50mm

Digital/Analog Durometer compliance with SIRS and JIS

Analog Digital

GS-701N

Type C(Asker C)

for soft rubber and eraser

These durometer is used according to a regulation of physics testing method for Polyurethane Elastomer formed materials, and comply with JIS K732/JIS S6050 standard. Type A durometer is called as Shore A, and Type D durometer is called as Shore D and Type C for lower hardness is ASKER C. GS-701N(G) is same with ASKER C Durometer and comply with JIS 6050 standard (measurement hardness of eraser). SRIS 0101 standard(Japanese Rubber Association standard) based on above measuring method has been repealing now.

☐ Specification

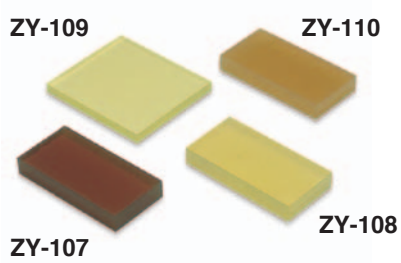
	Model	Type	Application	Applicable Standards	Spring Load Hardness 0-100	Indenter Shape	Indenter Height (mm)	Weight (g)
Analog	GS-701N	C	Soft Rubber, Foam rubber, eraser, Yarn hardness	JIS K 7312 JIS S 6050 SRIS 0101	0.54N-8.39N (55.1-855.5gf)	ϕ5.08 hemisphere shape	2.54	200
Analog	GS-701G	C			0.54N-8.39N (55.1-855.5gf)	ϕ5.08 hemisphere shape	2.54	208
Digital	GSD-701J	C			0.54N-8.39N (55.1-855.5gf)	ϕ5.08 hemisphere shape	2.54	313

*N: Standard *G: Peak Pointer *J: with Peak hold function *Indenter height: 2.54mm

Parts

Test Block (option)

These are rubber test pieces which can simply check whether accuracy of durometer is in the range of standard value . It is absolutely approximate value but accuracy of durometer can be easily controlled in a short period.



☐ Specification

Code No.	type	Dimension (mm)	Applicable Durometer
ZY-107	Durometer A Hardness:50	40×80×12 thickness	GS-719N・GS-719G・GSD-719S Measuring value: nearly 50
ZY-108	Durometer A Hardness:80	40×80×12 thickness	GS9719N・GS-719G・GSD-719S Measuring value: nearly 80
ZY-109	Durometer D Hardness:40	70×80×7 thickness	GS-720N・GS-720G・GSD-720S Measuring value: nearly 40
ZY-110	Durometer E Hardness:80	40×80×12 thickness	GS-721N・GS-721G・GSD-721S Measuring value: nearly 80

*Durometers complying with these test pieces are Type A, Type D, Type E, which are compliant with JIS K 6253.
*Calibration Certificate about test pieces can not be issued.

Digital/Analog Durometer compliance JIS K6301

Analog Digital

GS-703N
Type old JIS C Durometer
for Hard rubber and ebonite

GS-706N
Type old JIS A Durometer
for General rubber

Method for determining hardness of vulcanized rubber and thermoplastic rubber

Since JIS K 6253 was new established, the JIS K 6301 established in 1950 has been abolished in August 1998 due to the reason that JIS K 6301 have not been matching with ISO standard. The durometers compliance JIS 6301 has been used during 60 years and the durometers are still required in the worldwide countries since the data measured by durometer compliance JIS K6301 are still used in the existing market.
Type A(for general rubber) and Type C(for hard rubber) could be continued to supply from Teclock.

☐ Specification

	Model	Type	Application	Applicable Standards	Spring Load Hardness 0-100	Indenter Shape	Indenter Height (mm)	Weight (g)
Analog	GS-703N	old JIS C	Hard Rubber	JIS K 6301 Spring Type C	980-44100mN (100-4500gf)	ϕ0.79 with 30°angle Truncated Cone	2.54	200
Analog	GS-703G	old Type C	Hard Rubber	JIS K 6301 Spring Type C	980-44100mN (100-4500gf)	ϕ0.79 with 30°angle Truncated Cone	2.54	208
Analog	GS-706N	old JIS A	General Rubber	JIS K 6301 Spring Type A	539-8385mN (55-855gf)	ϕ0.79 with 30°angle Truncated Cone	2.54	200
Analog	GS-706G	old Type A	General Rubber	JIS K 6301 Spring Type A	539-8385mN (55-855gf)	ϕ0.79 with 30°angle Truncated Cone	2.54	208
Digital	GSD-706J	old Type A	General Rubber	JIS K 6301 Spring Type A	539-8385mN (55-855gf)	ϕ0.79 with 30°angle Truncated Cone	2.54	313

*N: standard *G: with Peak Pointer *J: Peak hold function *Indenter Height: 2.54mm

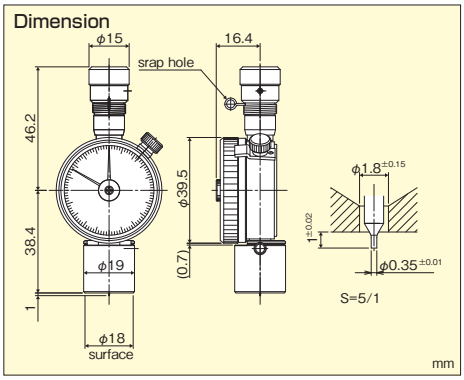
Analog Pocket Durometer

Analog

These durometer is used for hardness measurement of thin sheets of Elastomer and rubber.
The Indenter height is shortened(1mm of 1/2.5) and these durometer is suitable for sheets hardness measurement of relative comparison and dispersion. This is Teclock original standard but the pocket durometer is designed for obtaining approximate value of Type A.

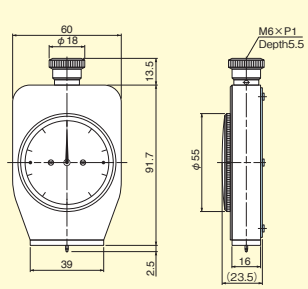
GS-779G
weight: 125g
with Peak pointer

Dimension

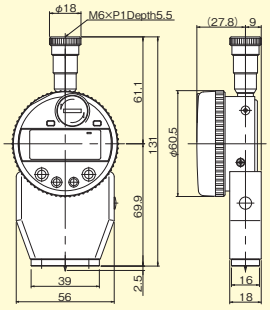


●Dimension of Durometers

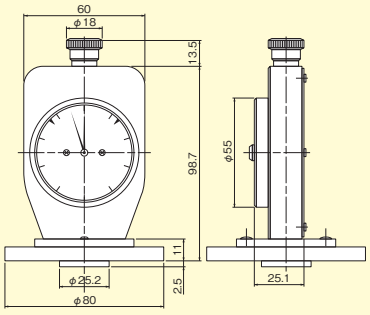
Analog Type



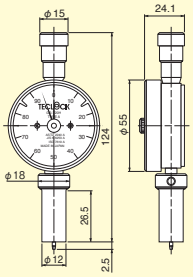
Digital Type



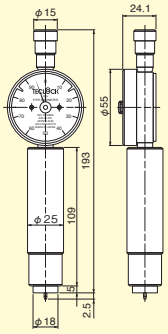
Type D(744G)



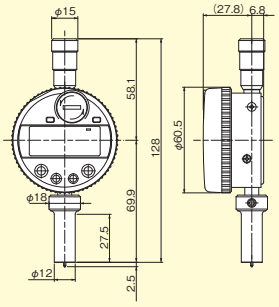
Deep hole type(Analog)



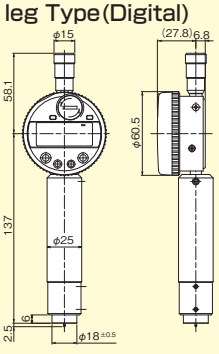
Long leg type(Analog)



Deep hole Type(Digital)



Long leg Type(Digital)

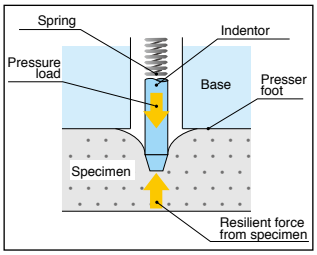


mm

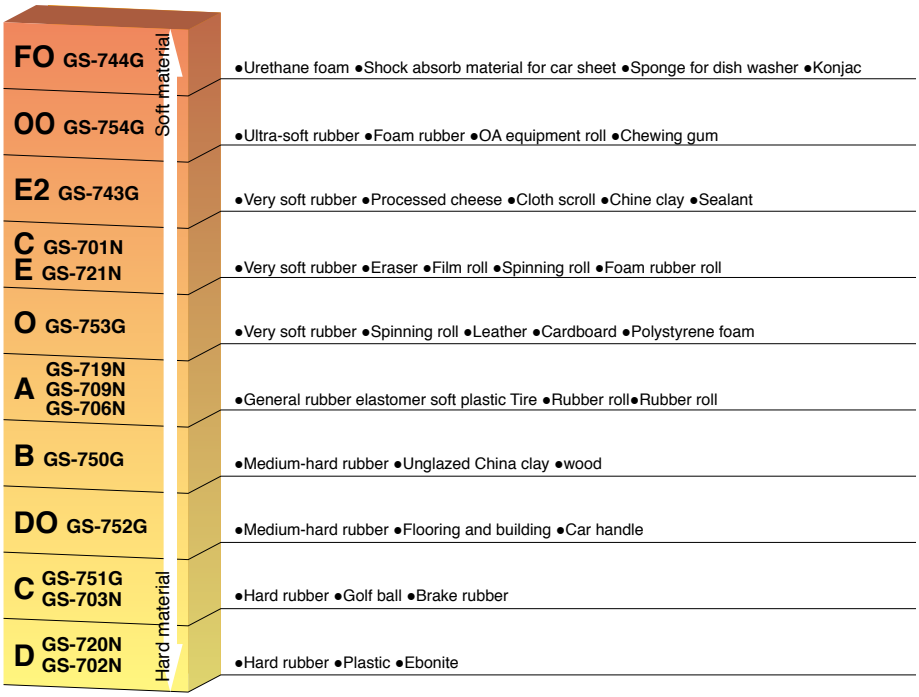
Durometer & IRHD Hardness Tester

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.

Model Selection of Durometer



As to measured value by durometer (robber and plastic hardness tester), when the base of durometer and work piece are cohered each other, the indentor changes shape of work piece by pressurized force caused by spring of durometer and work piece makes force against this force. Force amount of indentor is indicated as hardness when this pressurized force and repulsive force are equivalent.
If repulsive force is weak, it shows low value (soft), on the contrary, if repulsive force is strong, it shows high value (hard). There are various type of durometers of which force of springs and shape of indentors are different. The reason why there are various kinds of durometers, it is for the purpose of showing degree of hardness with higher sensitivity against difference of material characteristics and shape of surface which work pieces have. Select a suitable product referring to the figure in the right.



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.

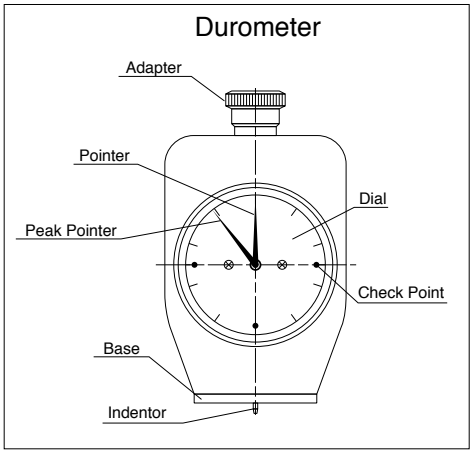
Measuring hardness with Durometer

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 (φ18mm) 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°C±2, humidity is 50±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.

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

Nomenclature



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±2℃、humidity 50±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 indentor.

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 indentor 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, indentor 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)Indentor 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 indentor edge shape of Type D durometer is not changed.

(2)Indentor shape : It is checked by measuring microscope whether dimension and shape of indentor edge is in the permissible value of standard. In case that there is abrasion or damage , indentor 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.