

COMPRESSION SET - DRIVE

A NEW CONSTRUCTION OF THE DEVICE FOR EFFICIENT PREPARATION AND
RELIABLE RESULTS



gibitre[®]
INSTRUMENTS

Standards the instrument complies with:

ASTM D1056; ASTM D1414; ASTM D3575; ASTM D395-B; EN 681-1; FIAT 50410; ISO 815;
ISO 1856; ISO 6916-1; ISO 6916-2;

About Compression Set Test

This Compression Set device complies with ISO 815, ASTM D 395 Method B, DIN 53 517 standards.

The Compression Set Test methods are intended to measure the ability of rubbers to retain their elastic properties at specified temperatures after prolonged compression at constant strain (normally 25 %) under specific Temperature and Deformation conditions.

For rubber of nominal hardness within the range 10 IRHD to 80 IRHD 25 % strain is normally used. For hardness of 80 IRHD and above, a lower compression strain is used: 15 % for a nominal hardness from 80 IRHD to 89 IRHD and 10 % for a nominal hardness from 90 IRHD to 95 IRHD.



ICS > 83 > 83.060

ISO 815-1:2019

Rubber, vulcanized or thermoplastic
— Determination of compression set
— Part 1: At ambient or elevated temperatures

Key Features

- Usable area optimized for 12 specimens
- Instrument setups with 2 or 3 plates
- Aluminum handle for one-hand manipulation
- 3-bolt lock for quick preparation
- Support base for screwdriver use
- Chrome-plated plates with standard roughness
- Calibration report for roughness and spacers thickness
- Circular anti-fall spacers
- Rubber feet



How to perform a test

To perform a test:

- 1) Insert the samples between the test plates
- 2) insert the 3 spacers requested to obtain the expected deformation
- 3) Close the bolts until the plates come in contact with the spacers to apply the expected deformation
- 4) Place the whole device in an oven at the set temperature and for the desired test time
- 5) Remove the device from the oven and measure the permanent deformation using the procedure described in the standards



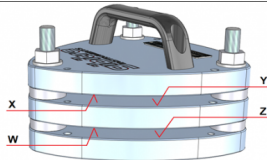
Calibration Report for Compression set device

The Compression Set device is equipped with a **unique identification label** and is supplied with a **Calibration Report** with traceability to the reference instruments used.

The Calibration Report includes the measurements of:

- **Surface roughness** of the device in accordance with the requirements of the standards.
- **Spacer thicknesses** measured in 3 points.

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	CER_CSET_001 Rev. 01 IN
Calibration Report n°	C-SET16336_12879

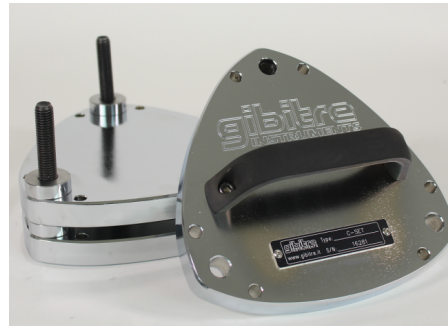


Calibration of: **Surface Roughness**
 Standards: **ISO 815 Rubber, vulcanized or thermoplastic — Determination of compression set**
 Procedure: The calibration is performed by testing the roughness in different points of the surfaces of the instrument which are in contact with the sample. The measure is performed using a calibrated Rugosimeter
 Reference Instruments:
 RUG_01 Uncertainty: (Ra) 0,1955 µm Deviation 0,00 µm

Surface	Max permitted value Ra [µm]	Measure1 µm	Measure2 µm	Measure3 µm	Mean µm	Uncertainty U _{rel} 95% µm	Outcome
X	0,4000	0,203	0,119	0,191	0,1710	0,2024	ok
Y	0,4000	0,266	0,234	0,211	0,2370	0,1981	ok
Z	0,4000	0,191	0,226	0,219	0,2120	0,1967	ok
W	0,4000	0,170	0,146	0,199	0,1717	0,1979	ok

Aluminum handle and optimized size for easier manipulation

Compression set devices require frequent movements and manipulations and must be placed in stoves. Being able to manipulate the instrument with one hand is certainly an advantage. The solid **anodized aluminum handle** improves handling but does not increase the volume occupied in the stove. The size and thickness of the plates have been designed to ensure the necessary rigidity while maintaining a low weight: 11.5 kg for the 3-plate device and 8 kg for the 2-plate device.



Closure with 3 bolts

The device allows the closing of the **upper plate using only 3 bolts**. The bolt head is recessed into the base plate to avoid the use of two wrenches. 3-bolt closure reduces preparation time by 25%.

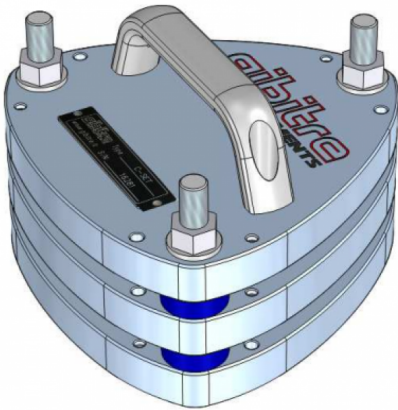


Three plate device construction

The 3-plate model is optimal for performing large quantities of tests in one run, allowing up to 24 ISO 815-1 Type 1 specimens to be tested simultaneously.

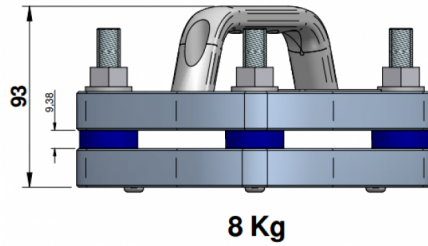
For changing control needs, the intermediate plate can be added or removed.

The total weight of the assembled device is 11,5 kg



Two plate device construction

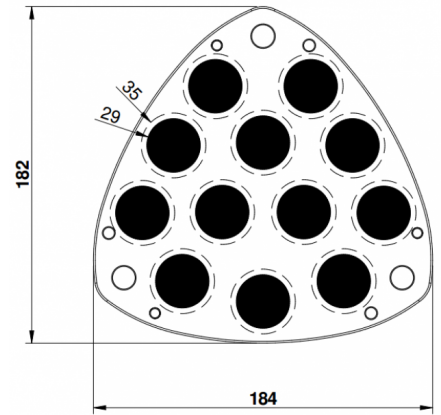
The 2-plate model is versatile and light, allows you to test up to 12 ISO 815-1 Type 1 specimens simultaneously and is optimal for laboratories where specimens arrive in staggered fashion. The total weight of the device is 8 kg.



Optimized surface for numerous specimens

The usable surface of the devices allows to test up to 12 ISO 815-1 type A specimens.

A rectangular device with the same surface could only accommodate 8.



Support base: Assembly and Opening of the device Quick and Safe

The assembly and opening operation of the device can be tiring and not without risks.

The support base, specially designed to be locked in a vice, ensures that the device does not move during operations and **allows you to use the automatic screwdriver** to avoid the use of wrenches: a pit stop for your Compression set.



Mould for samples

- Mould for sample preparation
- Thickness meter for the measure of sample thickness



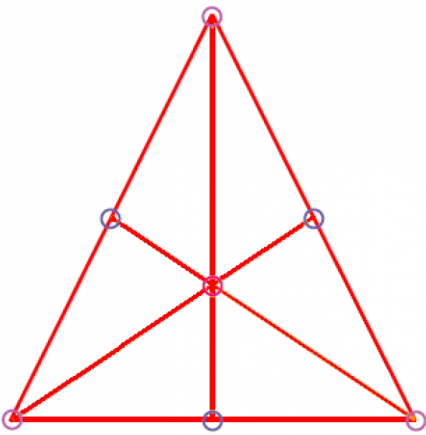
Interchangeable silicone feet: safer handling and attention to the laboratory

The reduction in the number of sharp and angular surfaces helps to reduce the risk of shocks and noise during numerous manipulations of the devices.



Equilateral triangle construction

The shape of the equilateral triangle device and the thickness of the 18 mm plates eliminates the risk of deformation of the plates even with a large number of specimens with high hardness and guarantees to apply the same deformation to all specimens.



Development and production

The instrument is totally developed and produced in the plant of Gibitre Instruments in Italy.

All the mechanical parts are produced in the **company workshop using modern CNC machines.**

Components and sensors from well-known brands are selected in order to ensure the maximum reliability in the measures

Internal trained personnel takes care of all the production stages: assembly, start-up, calibration, packing, shipment and installation.



Testing Configuration

Dimensions of the assembled device Device with 3 Plates:(WxDxH) 182x184x123 mm
Device with 3 Plates:(WxDxH) 182x184x93 mm

Number of plates 2 or 3

Usable surface / Samples for layer 100 cm² - 12 Samples (with 29 mm diam.)

Standard Spacers (Big sample) ISO 815 Type A: 9,35 mm ± 0,05 mm
ASTM D 395 Type 1A: 9,5 mm ± 0,02 mm
DIN 53 517-II: 9,38 mm ± 0,01 mm

Standard Spacers (Small sample) ISO 815 Type B: 4,75mm±0,05mm
ASTM D 395 type 2B: 4,5mm±0,01mm
DIN 53 517-I: 4,72mm±0,01mm

Technical specifications

Construction Characteristics Chrome-plated steel plates with 18 mm thickness.

Roughness of the plates Ra < 0.4 µm

Calibration Calibration report with traceability to the instruments used. Calibration includes:
- Measurement of surface roughness
- Measurement of the thickness of the spacers

Weight of complete device Device with Two Plates: 8 kg
Device with 3 Plates: 11.5 kg

Bolts for Closure N ° 3 Bolts for high temperature M18. The screws are recessed in the device to allow quick closure with screwdriver



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