POLYMERTEST

Tř.T.Bati 299 , 764 22 Zlín

polymertest

Devices for determining the rebound resilience of rubber

by ISO 4662, ČSN 62 1480 and DIN 53 512

1. Purpose of the test

Rebound resilience is the ratio of energy returned to the energy spent on deformation of the testing subject in the moment of impact of bumper pendulum. Test method of the test and the calculation is described in ČSN621480, ISO 4662, DIN 53 512.

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2. Description of the testing machine
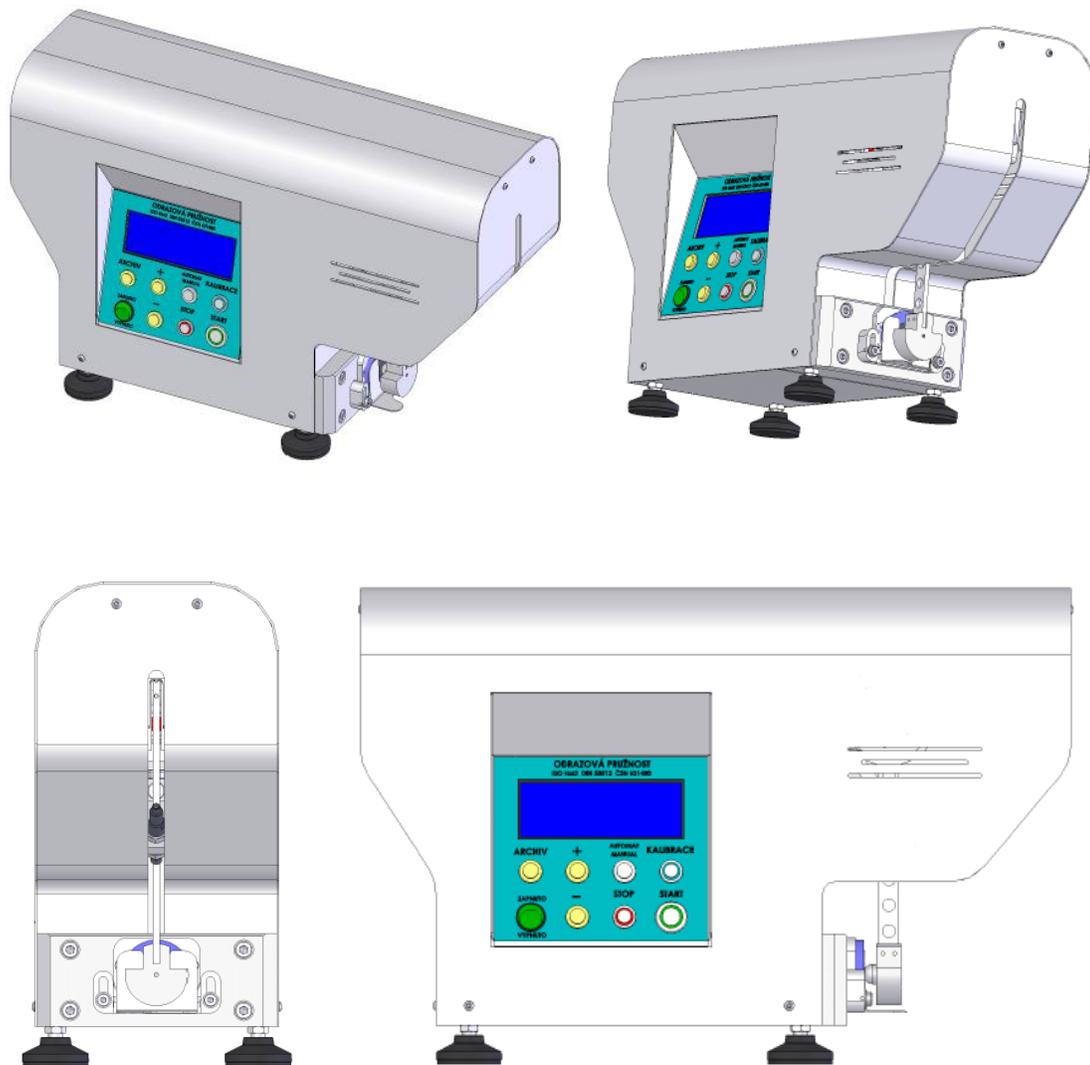
The mechine has a heavy metal base on which there is pendulum arm and bumper mounted. On the side of the stand there is located a spring holder of the testing subject. At the end of the latch there is an arm for arresting the pendulum in its upper position with a actuated lever of an electromagnet.

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PANEL

Electronic equipment consists of a pendulum angle sensor. Signals from the angle sensor are led to a display unit which calculates a value of reflection of bumper R in percentages.

Technical data :

Energy of the pendulum:	0,5 J
Pendulum impact speed:	2 m/s
Electrical equipment:	220V / 50 Hz, 5 VA
Size of the testing subject	ø from 29 to 53; width 12,5 mm or 6,3mm

For other dimensions it is necessary to chnage the height of the underlay

Dimensions of the machine :	lenght 360 mm
	width 160 mm
	height 320 mm
Weight of the machine :	cca 35 kg

Versions:

The are always two samples for testing.

A, Manual version

After each blow of hammer it is necessary tocaptured it by hand and locked it in the up position. Then after 2 seconds it releases itself and it is again necessary to capture it and lift. After 12 strokes (after 6 staff exchang the sample) the value of rebound resilience is calculated.

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B, Automat version

Staff in this case just clamps testing subjects and press Start. The machine according to the methodology automatically performs 6 hits. The hammer itself rises to the top position.

In this was three bumps of pendulum are performed. This represents mechanical conditioning of the testing subject.

Only with the next three bursts the measurement of rebound resilience is followed and the computer program provides a median from three measured data
Then staff replace the sample and the process is repeated.

At the end the program calculates the rebound resilience (of two samples - total of 12 strokes).

The advantage is that the measurement is provided automatically without operator intervention and calculation is done by using the program. Staff main responsibility is to change the samples.

3. Test procedure
Opening screen

After the main switch is on the screen with basic information is displayed for 5 sec. Then the screen displays "READY FOR TESTING"

If the hammer or the jack is not in extreme positions the screen displays "OUT OF POSITION"

Hammer out the curtain – rises manually.

Display for calibration

Calibration is performed only when the machine is relocated. It is sed to verify the accuracy of alignment.
Procedure:
A, Staff inserts the testing sample. Press the MANUAL button. Hammer starts (start button). Legs of the mechine are set so that the spherical surface of the hammer lightly touch the testing sample, or is in the max distance of 0.5 mm.
B, Staff presses the CALIBRATION button, the hammer rises and the data on the display are checked. It should be 90 ± 1.If not, it is necessary to underlay the sample. This calibration is completed and the operator presses the AUTOMAT button.

Display panel during the test

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Before the test

Conditioning of the first sample

The testing fot he first sample is finished

The testing fot he first sample is finished
Conditioning of the second sample

Measured values - the result

Archive work

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Test procedure - manual version

A, The screen displays READY FOR TESTING. The operator clamps the sample A and presses the Start button. The machine releases the arm after 2 seconds and it goes on rubber. The hammer bounces and the operator have to catch it when the bounce goes back and the hammer falls again on the sample.

Rotary angle automatically sensores the captures turnover. If the operator catch the hammer sooner, the sensor would not reflect the correct value of the bounce.

After the operator picks up the hammer he/she has to wait - it is automatically released after 2 seconds. The operator performs 3 strikes that are not measure and then three strikes which are measured.

B, The operator places the sample B and the process is repeated (3 + 3 hits).

C, After measuring the measured value is either stored in the archive by pressing the START button or it is canceled by pressing the STOP button.

Test procedure - automat version

A, The screen displays READY FOR TESTING. The operator clamps the sample A and presses the START button. The machine performs 3 strikes which are not measured and then three strikes, which are measured.

B, The operator places the sample B and presses the START button again.

C, After measuring the measured value is either stored in the archive by pressing the START button or it is canceled by pressing the STOP button.

ARCHIVE OF THE MEASURED DATA – it is valid for the both of versions

The results are stored in the archive. This operator activates it by pressing the ARCHIVE button and goes through it by pressing the + - buttons. The operator leaves the archive by pressing the ARCHIVE button. The oldest values are overwritten. The archive keeps 36 results. When the operator turn off the main switch, it resets the archive.

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