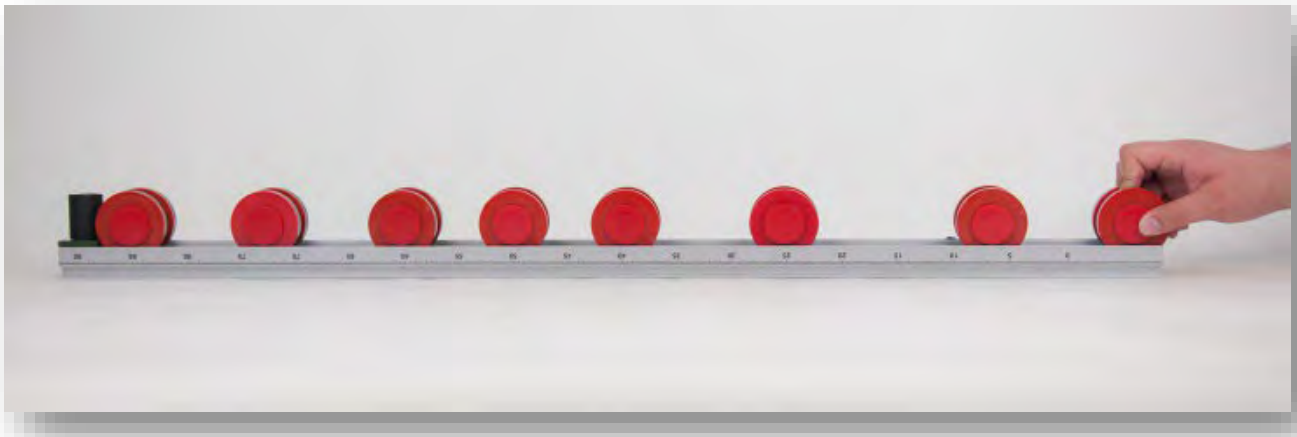
SOUND – MODEL OF A LONGITUDINAL WAVE

AKD 02.01



Material:

Item Code	Qty	Description
DS101-3B	1	Track and Optical bench, demo, L=1000 mm
DE420-1E	16	Ring magnet 63/30 mm, in plastic casing
DW470-1R	8	Axle for ring magnets
DS103-2H	1	Holder for stand rails, universal
DM362-1E	1	Baffle block

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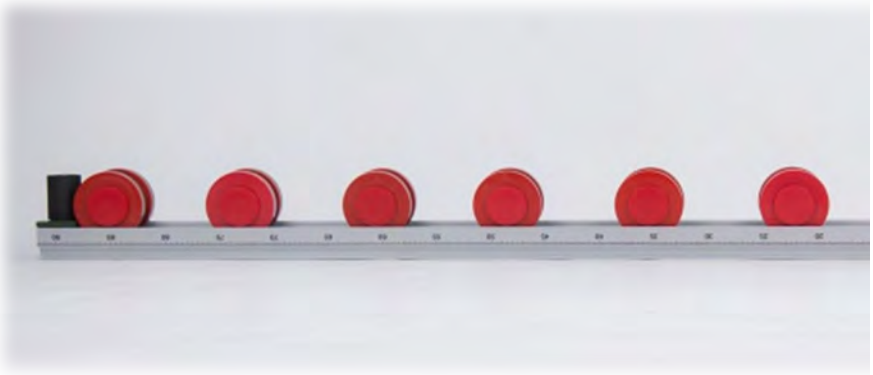
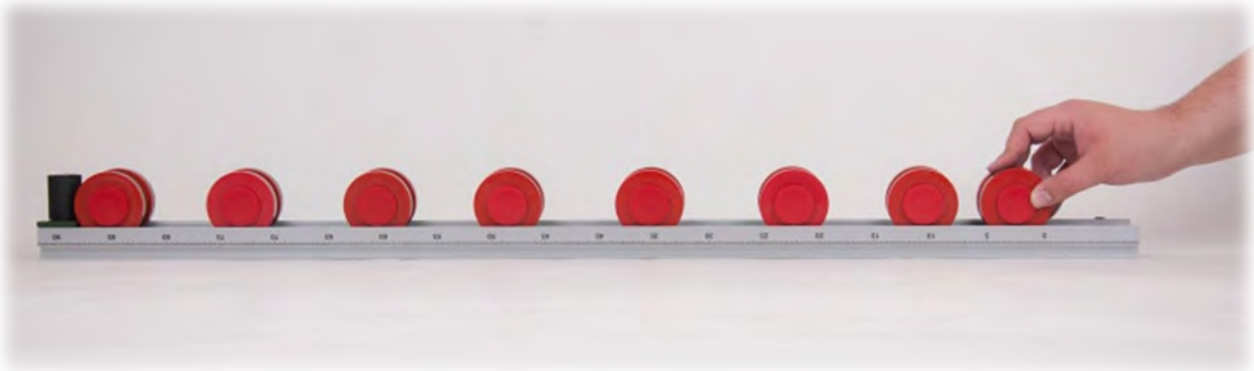
Goal:
If the oscillations take place in the direction of propagation of the wave, then condensations and rarefactions occur.

Setup:
The universal rail 100 cm is placed on the table as a running rail (channel). The universal rail holder is clamped at one end and the buffer block is placed on it. Two ring magnets are placed on each of the axles, the polarity must be observed. The "magnetic rollers" are placed in the track. If the polarity is correct, the rollers align themselves with equal distance.



Experiment:
The first roller on the open side is pushed as quickly and jerkily as possible against the other rollers on the right side. Then the movement of the other magnetic rollers is observed.



Result:
Starting from the left roller, there is a pushing together (compression) of the rollers in each case. At each approach of two rolls there is a transfer of the movement impulse. Afterwards it is reflected as dilution - the rolls have further distance.

This form of wave propagation is called a "longitudinal wave".
Sound waves are longitudinal waves and propagate as shown in this model.

Note:
Whenever elastic forces act in the direction of vibration, longitudinal waves occur. They therefore exist in solids, liquids and gases, such as sound waves.

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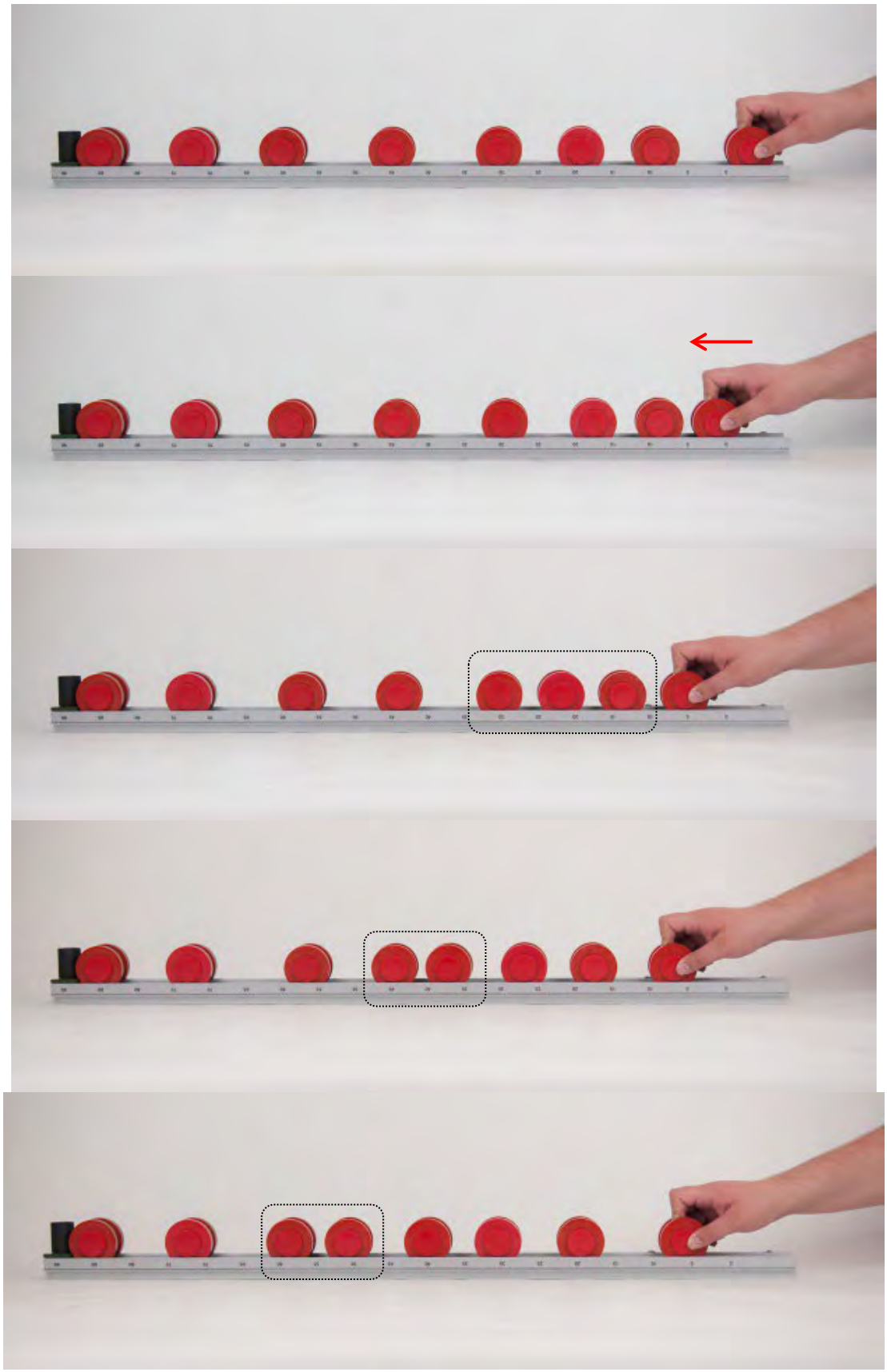

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