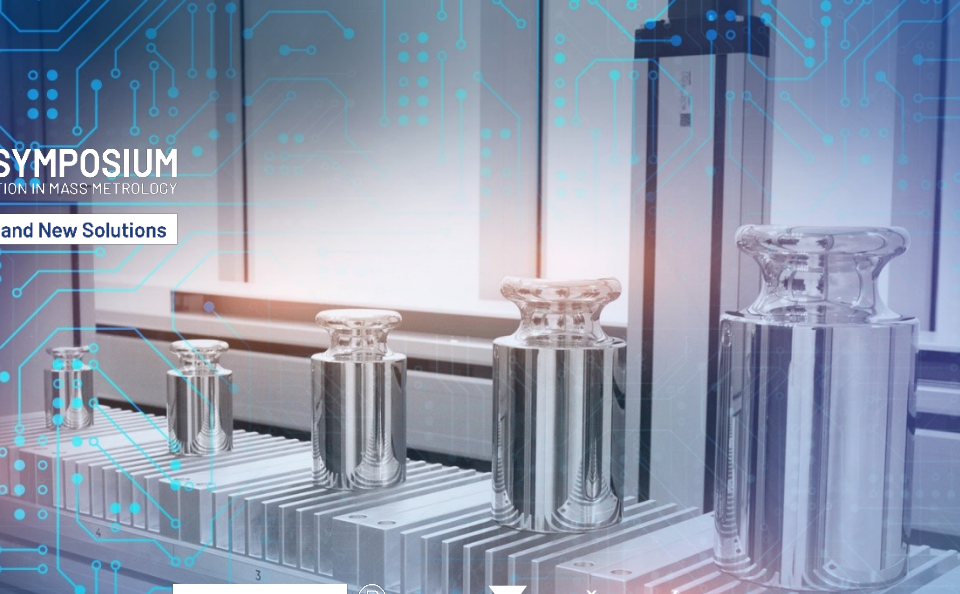




METROLOGY SYMPOSIUM
DIGITALIZATION AND AUTOMATION IN MASS METROLOGY

Third Edition: Future and New Solutions



ČESKÝ
METROLOGICKÝ
INSTITUT

The influence of measuring automation on repeatability of mass comparators



METROLOGY SYMPOSIUM

DIGITALIZATION AND AUTOMATION IN MASS METROLOGY

Third Edition: Future and New Solutions



Daniel Majcher

A comparator specialist



Dominik Kowal

A comparator specialist

Presenters

Manual mass comparators

UYA.5Y.KO

[Max]: 6,1 g
[d]: 0,1 μg



XA.5Y.KO

[Max]: 6,1 g – 210 g
[d]: 1 μg – 10 μg



WAY.5Y.KO

[Max]: 110 g – 5100 g
[d]: 1 μg – 1 mg



Manual mass comparators

APP.5Y.KO

[Max]: 10,2 kg – 64 kg
[d]: 0,1 mg – 10 mg



HRP.5Y.KO

[Max]: 151 kg – 2100 kg
[d]: 0,5 g – 2 g

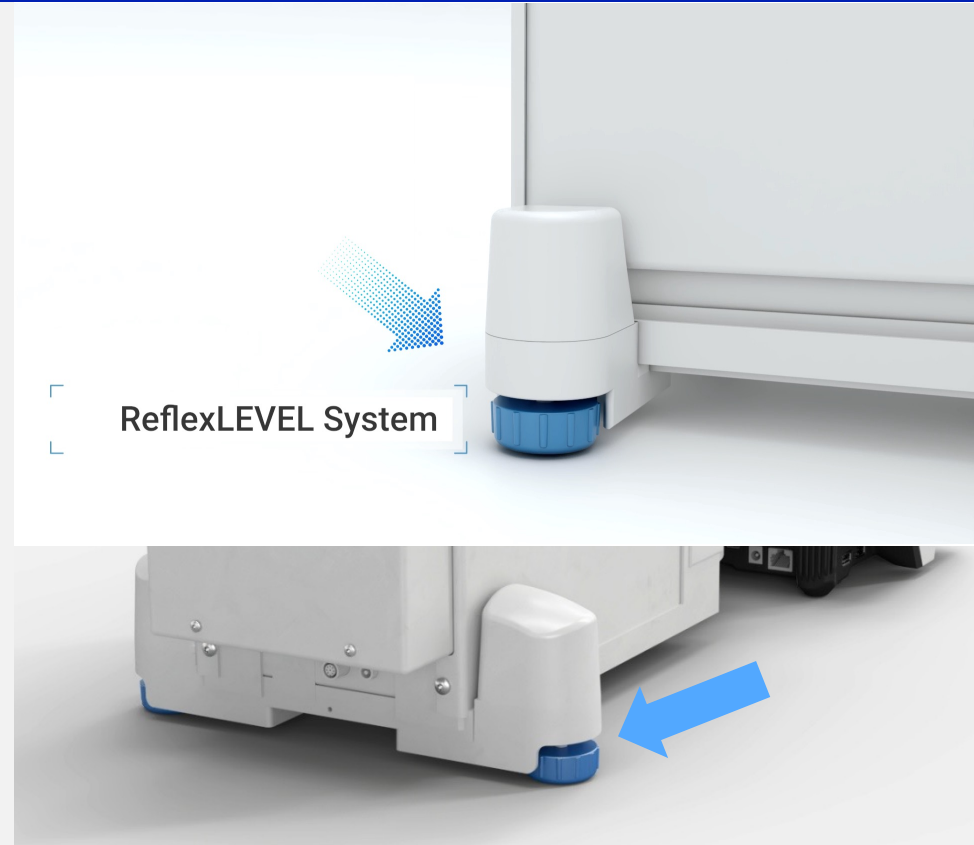
Main advantages of UYA.5Y.KO-series manual comparators

Fully automatic opening of the weighing chamber



Main advantages of manual comparators

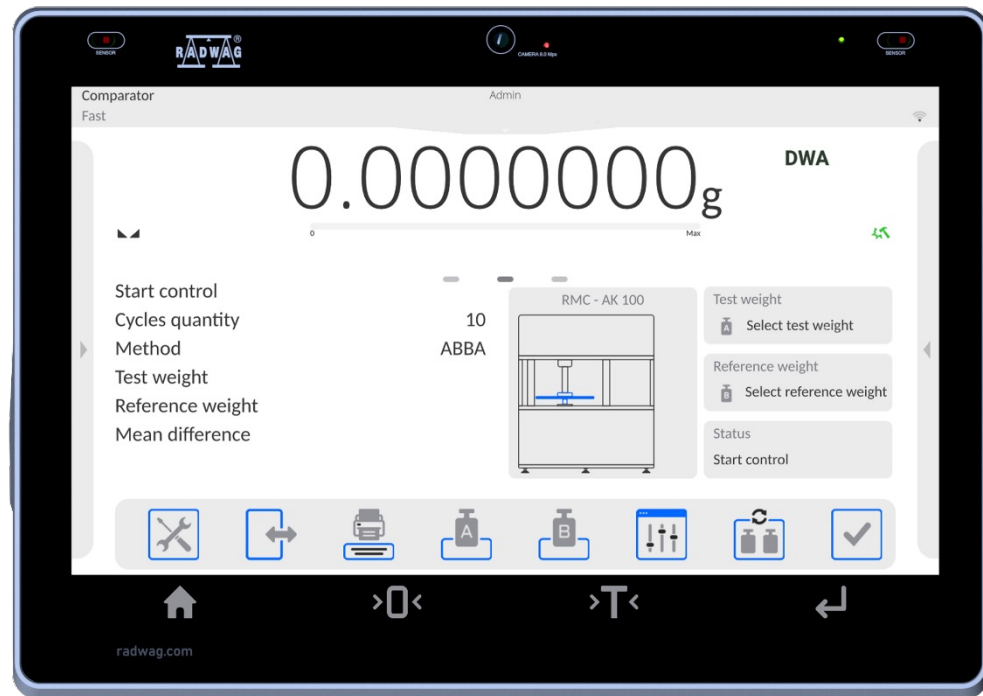
Automatic balance levelling - ReflexLEVEL System



Main advantages of manual comparators

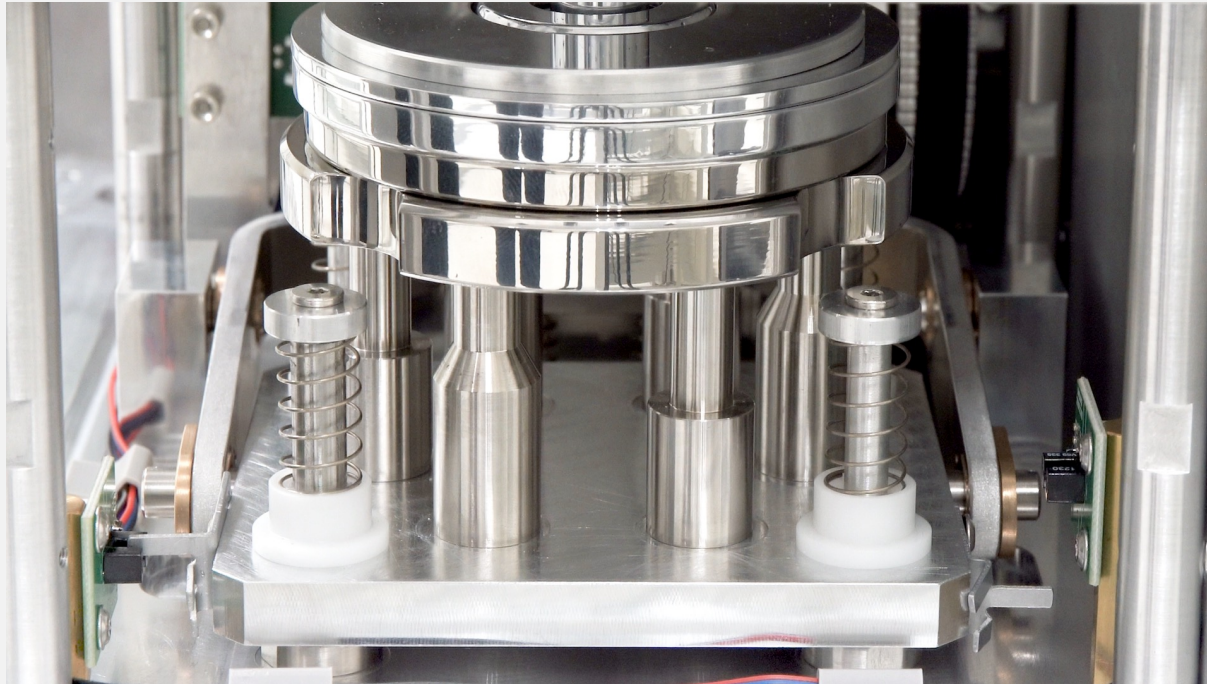
Special mode for mass standards comparison directly in the 5Y terminal with 10" screen

Bigger screen of 10" means more information in one place, as well as the possibility of using **comparison mode**, which enables to change the number of the cycles, comparison method etc...



Main advantages of manual comparators

Fully automated change of comparison range (automatic internal ballasts)



Main advantages of manual comparators

Possible to use a **self-centring weighing pan** in order to limit a non-centricity error.



Automatic mass comparators

UMA 5Y

[Max]: 6,1 g – 1060 g
[d]: 0,1 μ g – 5 μ g

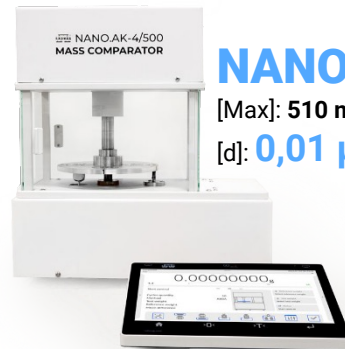


AKM-2.5Y

[Max]: 20,5 kg – 51 kg
[d]: 0,1 mg – 1 mg



Automatic
mass
comparator



NANO.AK-4/500.5Y

[Max]: 510 mg
[d]: 0,01 μ g

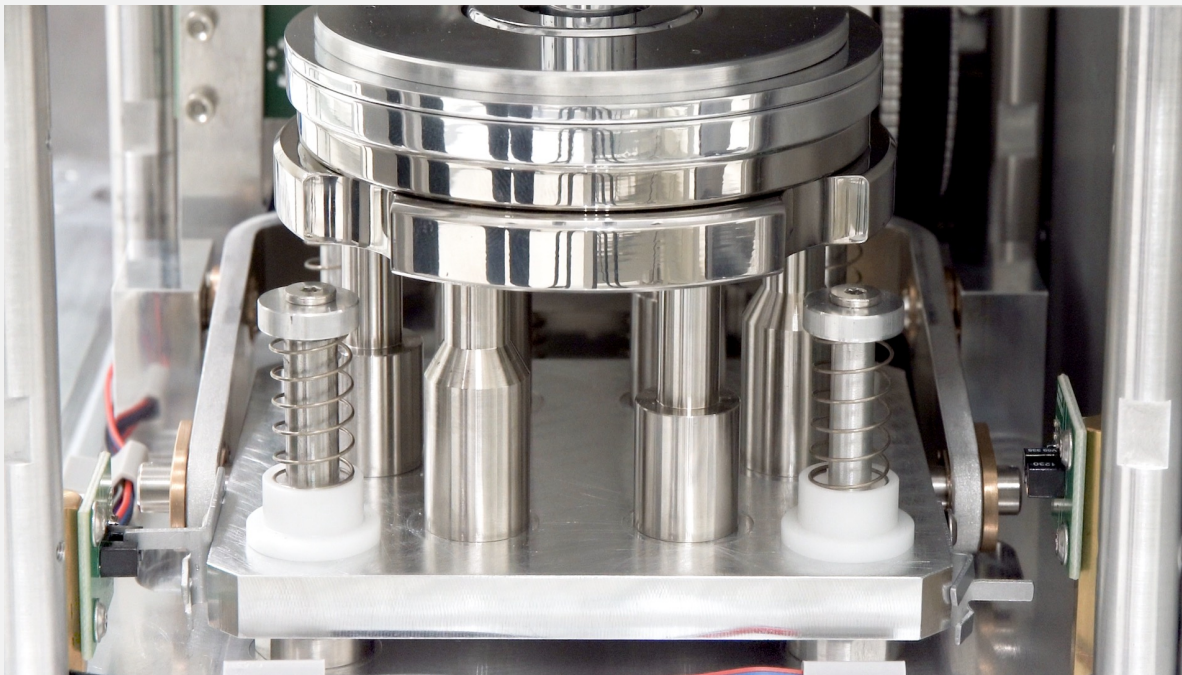


AK-4.5Y

[Max]: 110 g – 10050 g
[d]: 0,1 μ g – 0,01 mg

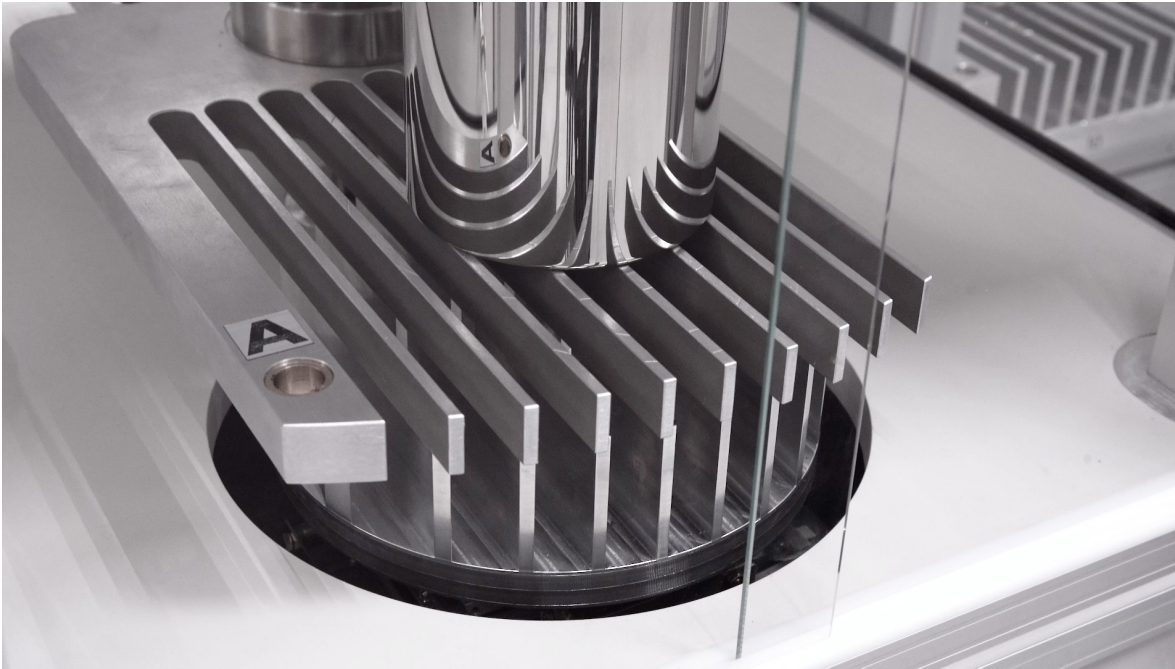
Main advantages of automatic comparators

Fully automatic change of comparison range (automatic internal ballasts)



Main advantages of automatic comparators

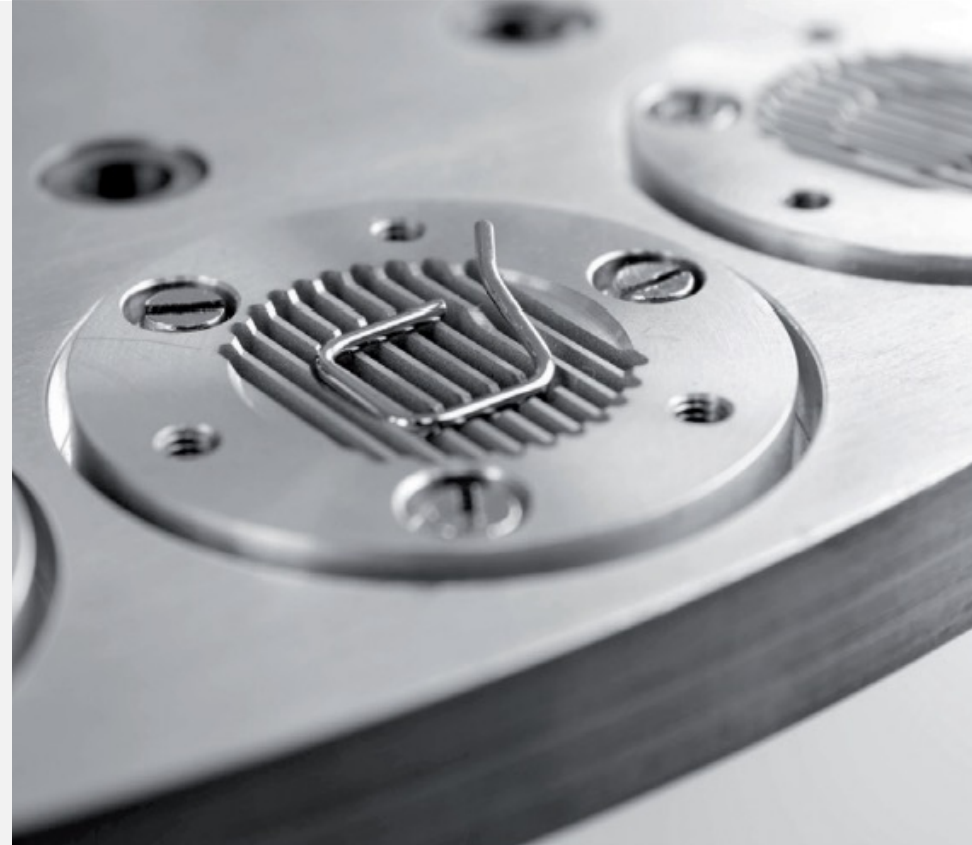
Possible to use a **suspended self-centring weighing pan** in order to limit a non-centricity error.



Main advantages of UMA.5Y-series manual comparators

Universal shape of the insert

Thanks to the structure of the insert, it is possible to weigh very low weights with high precision and to secure the mass standard against jamming. The UMA automatic comparators allow comparing all known shapes of weights with the use of one universal insert.



Main advantages of UMA.5Y-series manual comparators

The highest measurements repeatability in a short time

The UMA automatic comparators, thanks to excluding the “ human factor ”, as well as the temperature changes and the air drifts, feature the highest measurements repeatability. Thanks to the consistent structure of the device, the mass standards are located close to each other, which enables to shorten the comparison time to minimum.

Comparing the whole sets of the weights

The device is produced with 18 or 36 magazine positions - it has magazine for maximum of 36 weights. This is a very universal solution, which enables both comparison of the whole sets of weights in one process and the comparison of just a few weights of the same mass.



Comparison of repeatability of comparators with a maximum load capacity of 6 g

UYA 5.5Y

d=0,1 µg

Max: 6,1 g

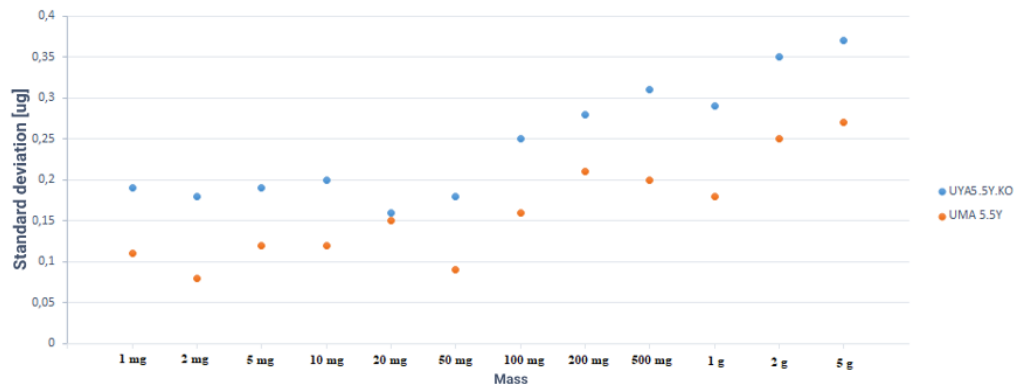


UMA 5.5Y

d=0,0001 mg

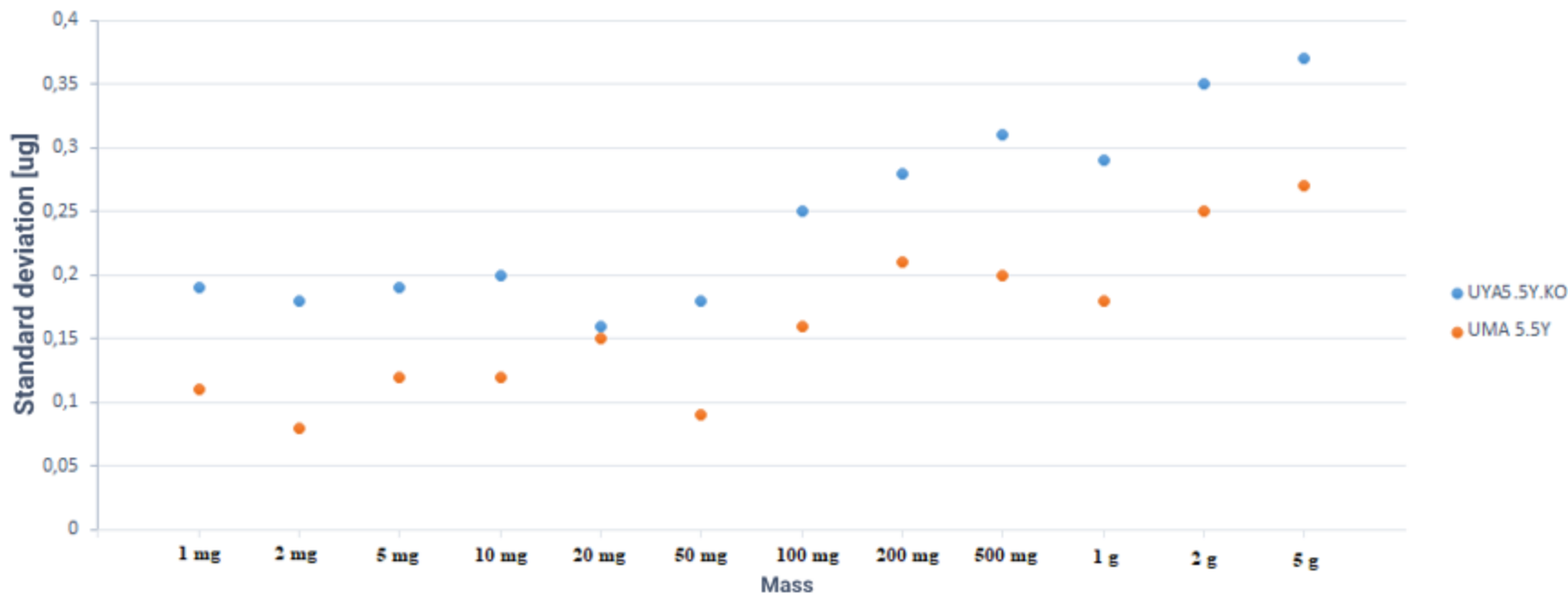
Max: 6,1 g

Comparison of repeatability of comparators
 UYA5.5Y.KO & UMA5.5Y



Comparison of repeatability of comparators with a maximum load capacity of 6 g

Comparison of repeatability of comparators UYA5.5Y.KO & UMA5.5Y



Comparison of repeatability of comparators with a maximum load capacity of 100 g

WAY 100.5Y.KO

d=0,001 mg

Max: 110 g

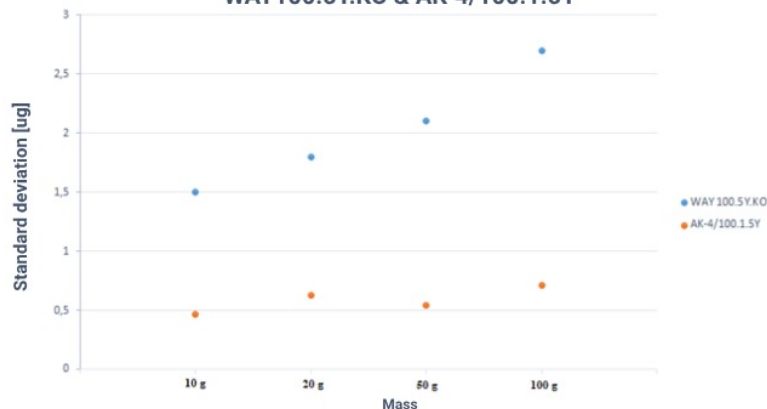


AK-4/100.1.5Y

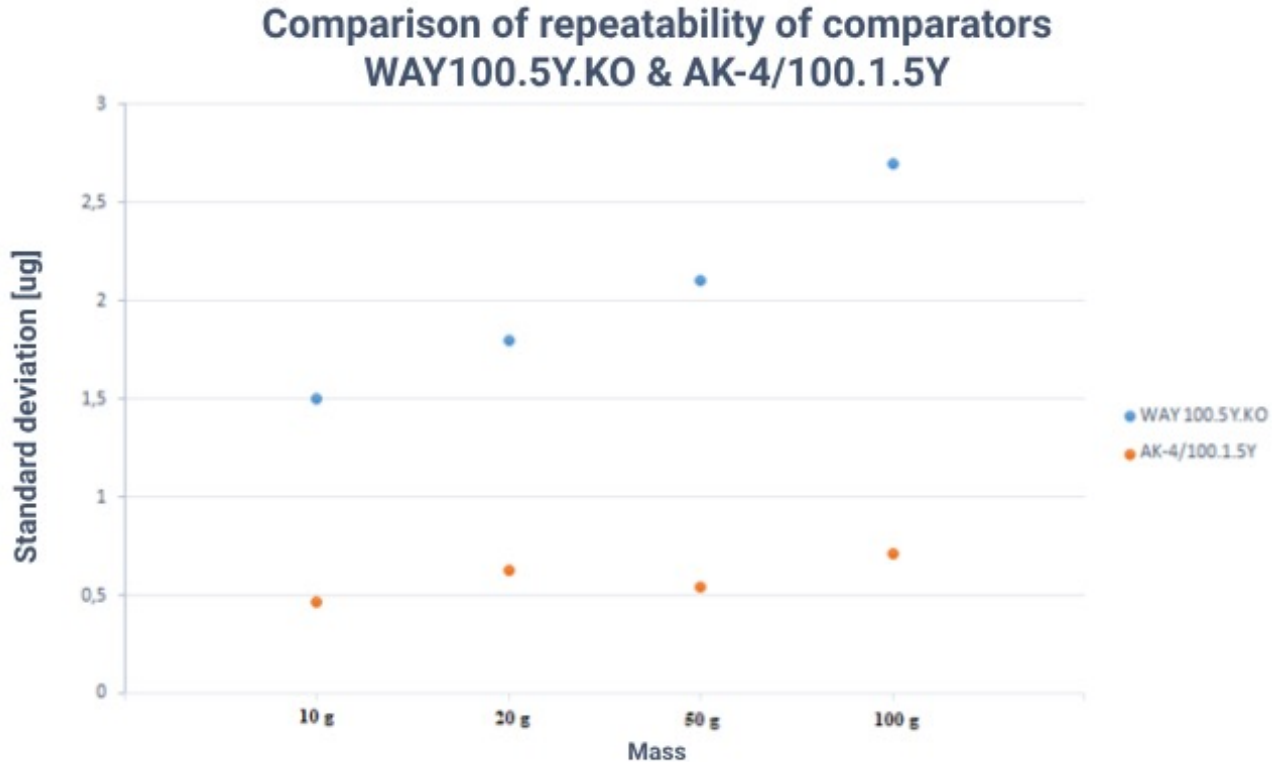
d=0,1 µg

Max: 110 g

Comparison of repeatability of comparators
WAY100.5Y.KO & AK-4/100.1.5Y



Comparison of repeatability of comparators with a maximum load capacity of 100 g



Comparison of repeatability of comparators with a maximum load capacity of 1000 g

WAY 1.5Y.KO

d=0,01 mg

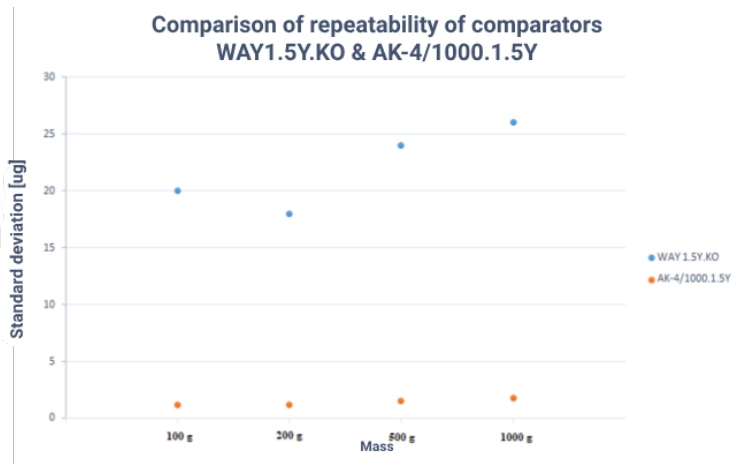
Max: 1020 g



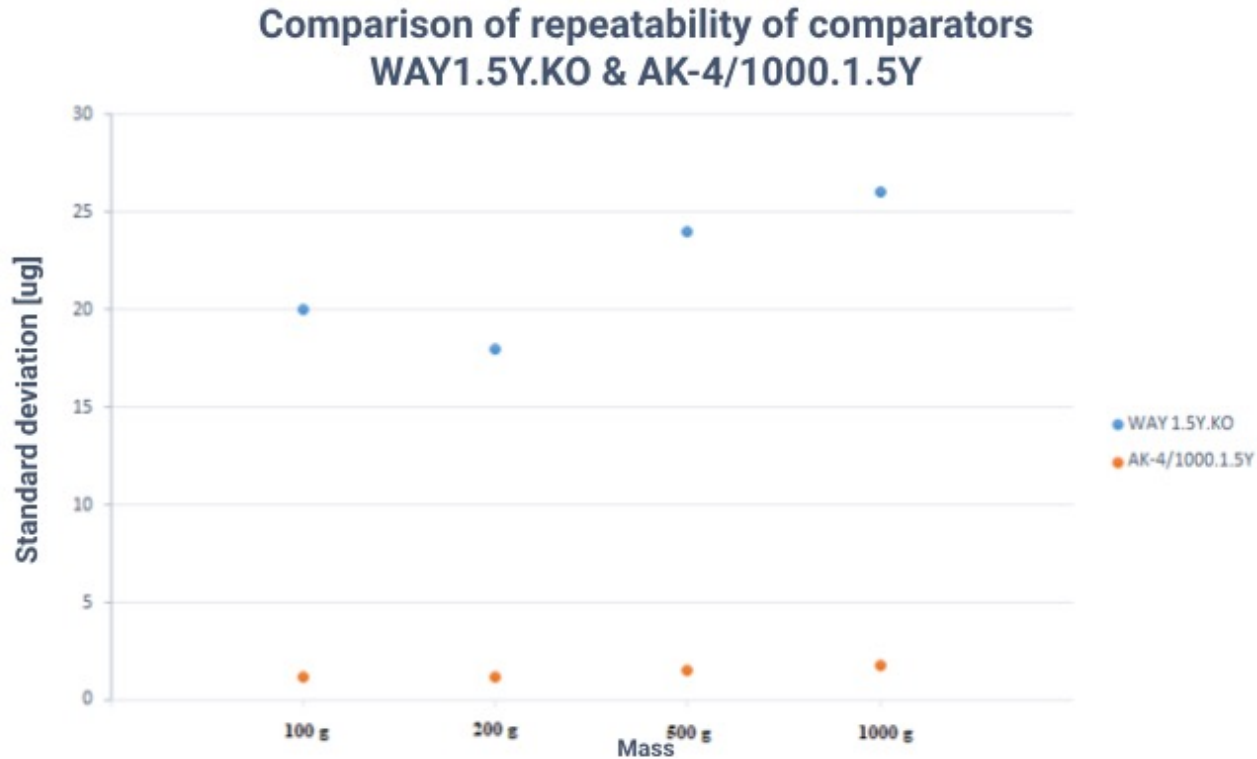
AK-4/1000.1.5Y

d=0,005 mg

Max: 1020 g



Comparison of repeatability of comparators with a maximum load capacity of 1000 g

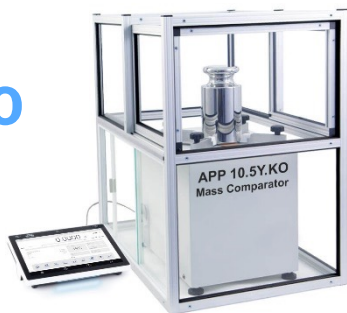


Comparison of repeatability of comparators with a maximum load capacity of 1000 g

APP 10.5Y.KO

d=0,1 mg

Max 10200 g

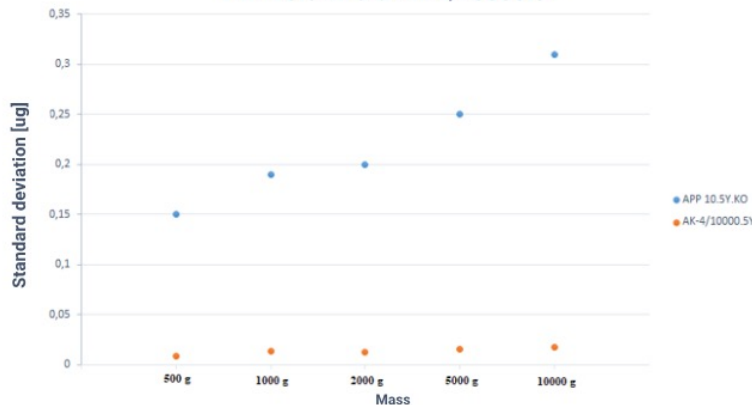


AK-4/10000.5Y

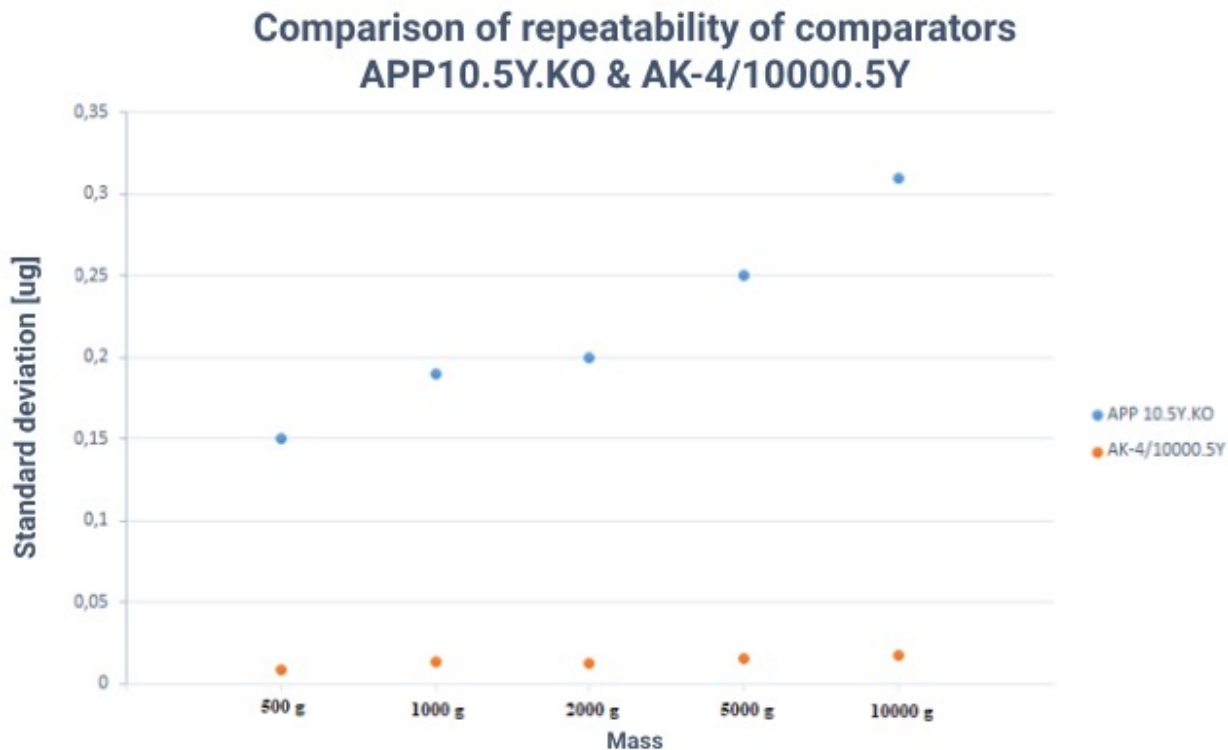
d=0,01 mg

Max 10050 g

Comparison of repeatability of comparators
APP10.5Y.KO & AK-4/10000.5Y



Comparison of repeatability of comparators with a maximum load capacity of 1000 g



The list of manual comparator installations

Over 100 comparators
sold per year



The list of automatic comparator installations





UMA 2.5Y.F Automatic Weighing System

The UMA 2.5Y.F Automatic Weighing System is used to test changes of masses of filters made of quartz fibre, glass fibre, Teflon and filters made of glass-fibre-covered Teflon.

The mass measurement is known for precision of 1 μg or 0.1 μg . The weighing system also allows filter conditioning as per requirements of PN-EN 14907, PN-EN 12341.



AK-4

Automatic comparator

AK-4 automatic comparator
for determination of mass of empty gas valves
and when filled with gas prepared for special
requirements of the National Institute of
Metrology in England NPL.



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**Thank you for
your attention**

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