RITVERC GmbH
Mössbauer Sources &
Reference Absorbers.
Grippers
Rev. 3.0/10/2016

Mössbauer Sources & Reference Absorbers

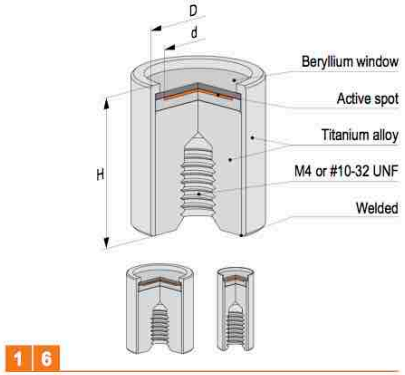
Mössbauer Sources: ^{57}Co

Mössbauer resonance on ^{57}Fe

Mössbauer source active part is prepared by electrodepositing high purity carrier-free ^{57}Co onto a thin metal backing (matrix) followed by controlled annealing process. Standard matrix is rhodium. Other matrices are available on request.

Capsule type	D×H, mm	d, mm	Nominal activity * mCi	MBq	Line-width, mm/s	Code
			5	185		MCo7.111
			10	370		MCo7.112
1	11.2×13	8	25	925	0.11-0.13	MCo7.113
			50	1850		MCo7.114
			100	3700		MCo7.115
			5	185		MCo7.121
			10	370		MCo7.122
2	14×14	8	25	925	0.11-0.13	MCo7.123
			50	1850		MCo7.124
			100	3700		MCo7.125
			5	185		MCo7.161
			10	370		MCo7.162
6	6×13	4	25	925	0.11-0.15	MCo7.163
			50	1850		MCo7.164
			100	3700		MCo7.165
9	4×14	1	5	185	0.13-0.15	MCo7.191
			10	370		MCo7.192
10	6×17	1	5	185	0.13-0.15	MCo7.1101
			10	370		MCo7.1102

* — tolerance -5...+10 %
Recoilless fraction: 0.75
14.41 keV photon emission efficiency: ≥ 75 %
ISO classification:
Capsule 1, 2, 6: C54243
Capsule 9, 10: C34243
Temperature range:
Capsule 1, 2, 6: 4.2 - 700 K **
Capsule 9, 10: 220 - 450 K
Recommended working life: 10 years
All sources are carefully tested on certified equipment. Each source is supported by a Test Report with measured values of Mössbauer spectra parameters.
** — additional notification is required for liquid helium temperature application



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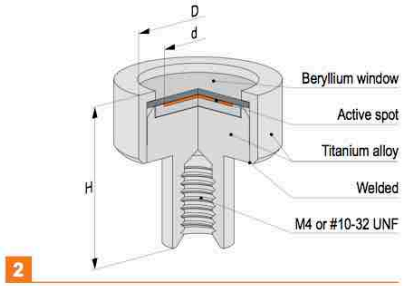

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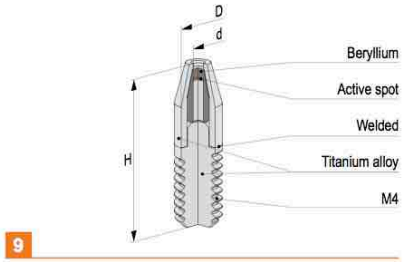

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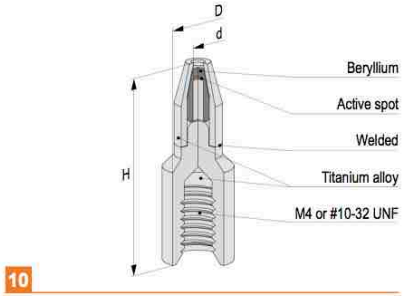

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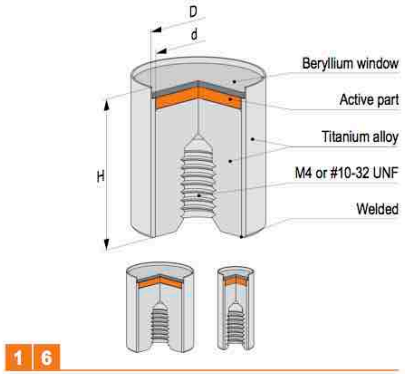
Mössbauer Sources: ^{119m}Sn

Mössbauer resonance on ^{119}Sn

Mössbauer source active part is based on calcium stannate [$CaSnO_3$] matrix synthesized from high specific activity (> 300 mCi/g) ^{119m}Sn radionuclide.

Capsule type	D×H, mm	d, mm	Nominal activity * mCi	MBq	Line-width, mm/s	Code
			2	74		MSn9.211
1	11.2×13	10	5	185	0.38-0.54	MSn9.212
			10	370		MSn9.213
			2	74		MSn9.221
			5	185		MSn9.222
2	14×14	10	10	370	0.38-0.54	MSn9.223
			15	555		MSn9.224
			10	370		MSn9.233
3	18×14	15	15	555	0.38-0.45	MSn9.234
			20	740		MSn9.235
6	6×13	5	2	74	0.45-0.54	MSn9.261
			5	185		MSn9.262

* — tolerance -5...+10 %
Recoilless fraction: 0.50
23.87 keV photon emission efficiency: ≥ 75 %
ISO classification: C54243
Temperature range: 77 - 700 K
Recommended working life: 10 years
All sources are carefully tested on certified equipment. Each source is supported by a Test Report with measured values of Mössbauer spectra parameters.



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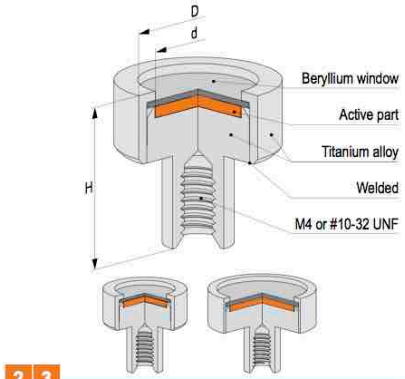

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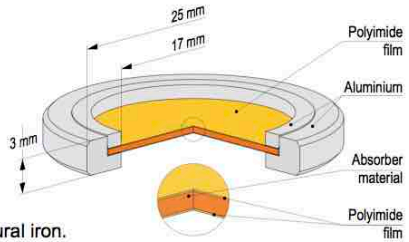
Reference Absorbers

Description	Thickness, mg ^{57}Fe/cm^2	Code
Enriched iron reference absorbers		
$K_2MgFe(CN)_6$	0.25-1.00	MRA.1.1
$FeC_2O_4{\times}2H_2O$	0.50-1.00	MRA.1.2
Fe_2O_3	1.00-2.00	MRA.1.3
α-Fe foil	3 μm	MRA.1.6
Natural iron reference absorbers		
$FeC_2O_4{\times}2H_2O$	0.13-0.25	MRA.2.2
Fe_2O_3	0.13-0.25	MRA.2.3
$K_4Fe(CN)_6{\times}3H_2O$	0.13-1.00	MRA.2.4
α-Fe foil	30 μm	MRA.2.6

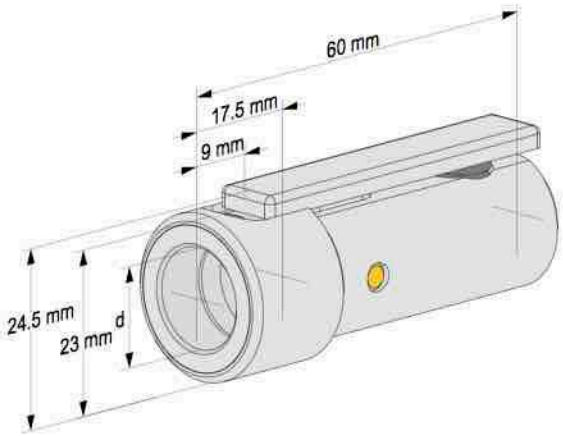


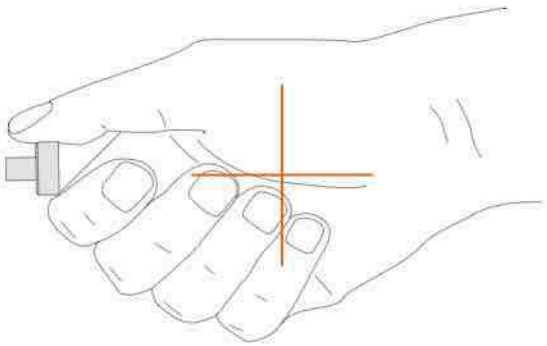
Reference absorbers contain chemical substances synthesized with either enriched ^{57}Fe (> 95%) or natural iron. The substances are uniformly dispersed in polyethylene and shaped into discs: 1 mm thickness and 20 mm in diameter, placed between two polyimide films with total thickness of 100±10 μm in aluminium holders. Potassium and potassium-magnesium ferrocyanide [$K_4Fe(CN)_6{\times}3H_2O$; $K_2MgFe(CN)_6$] exhibit unsplit narrow line in Mössbauer absorption spectra. Ferrous oxalate dihydrate [$FeC_2O_4{\times}2H_2O$] exhibits quadrupole splitting, leading to two narrow lines in Mössbauer absorption spectrum. Metallic iron and iron oxide [α-Fe; Fe_2O_3] exhibit magnetic hyperfine splitting, leading to six narrow lines in Mössbauer absorption spectra. All reference absorbers are carefully tested on certified equipment. Each absorber is supported by a Test Report with measured values of Mössbauer spectra parameters.

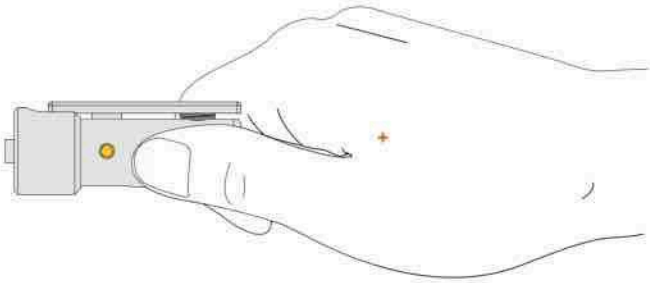
Mössbauer Sources Grippers

Grippers are designed for mounting and dismounting of Mössbauer sources (MCo7 and MSn9) manufactured by Ritverc GmbH on an NGR-spectrometer.
Significant decrease of gamma radiation dose provided by using of tungsten shield.

Code	Capsule type	d, mm
GrMS.1	1	11.2
GrMS.2	2	14
GrMS.6	6	6







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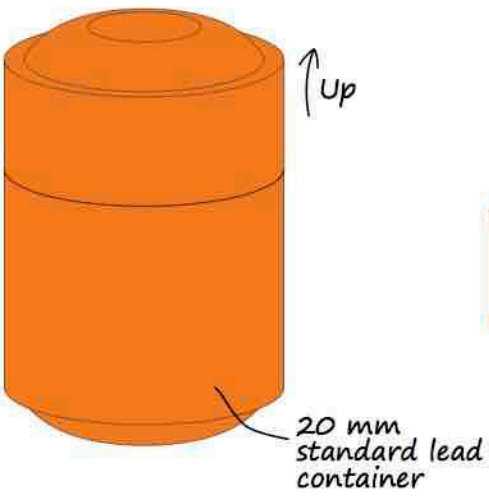

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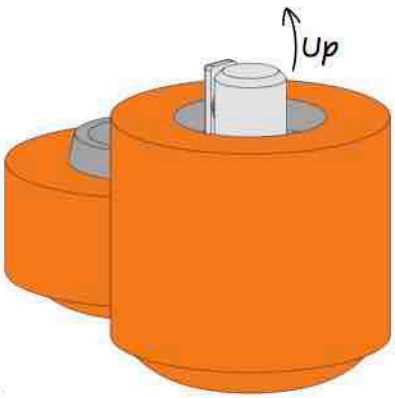

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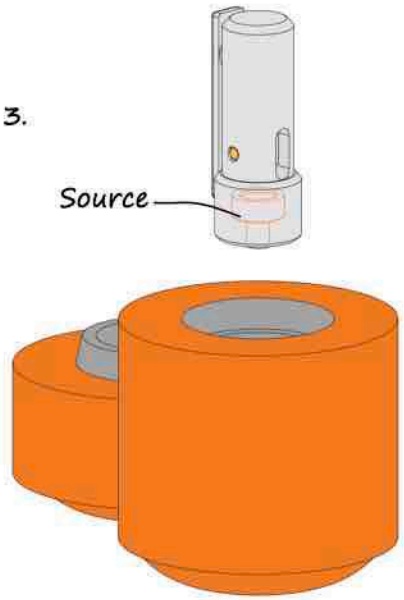

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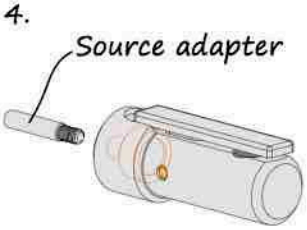

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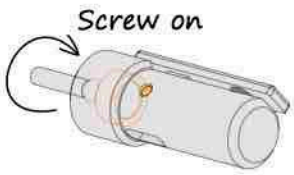

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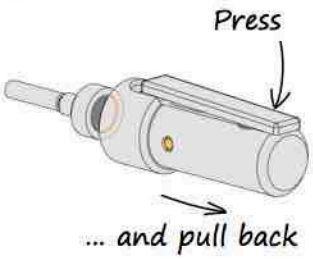

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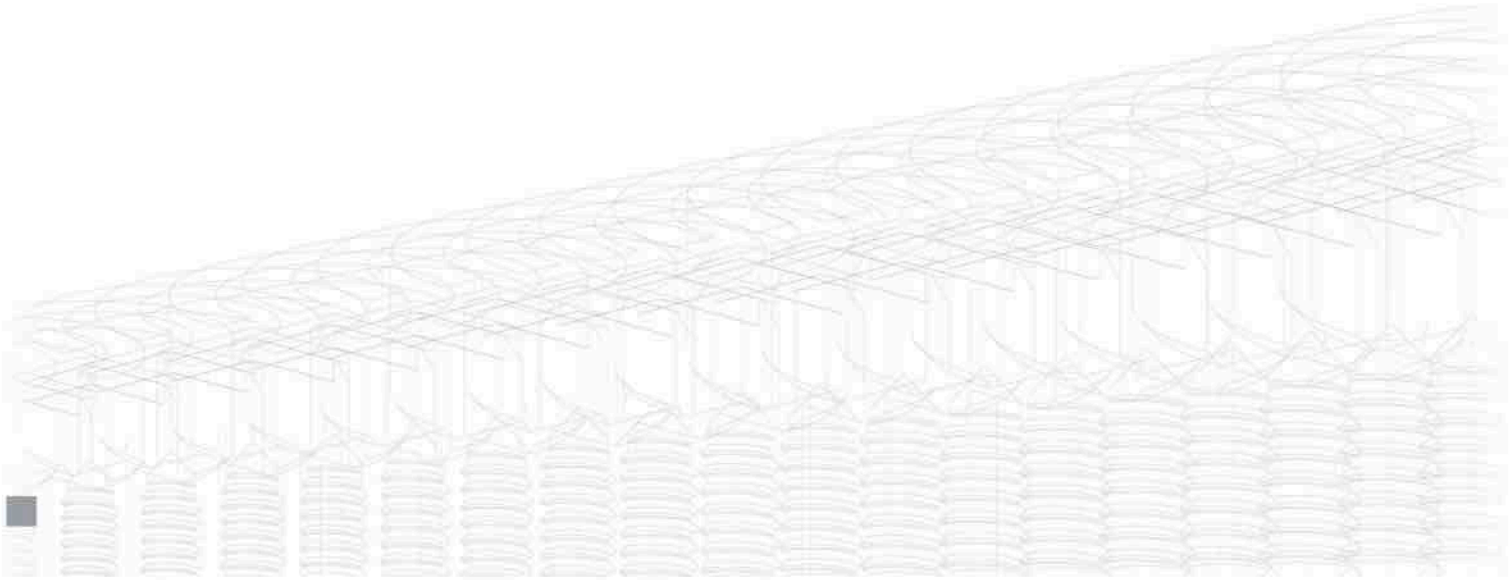

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