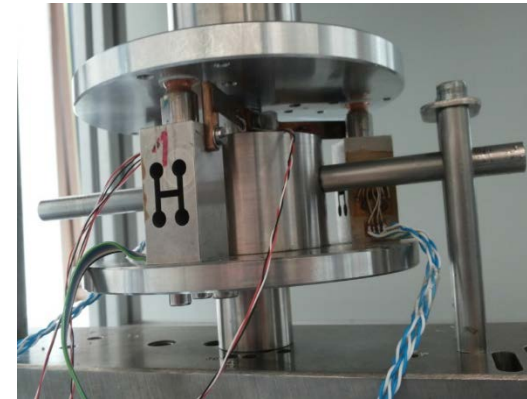


General overview of tribometers for cryogenic and vacuum applications

Name	CT2, CT3, CT4, CT5, CT6, VT1, VT2, PT1,
Type of motion	Unidirectional; reciprocating
Sliding velocity, v	0.0001 ... 10 m/s
Stroke, Δx	0.001 mm ... continuous
Frequency, ν	0.01 ... 25 s ⁻¹
Normal load, F_N	1 N ... 150 kN
Test chamber pressure, p	2×10^{-6} mbar ... 120 bar
Temperature, T	-269 ... 600 °C
Surrounding medium	LHe, LH ₂ , LN ₂ , LCH ₄ , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)

CT2 Cryotribometer

Name	CT2
Type of motion	Unidirectional; reciprocating
Sliding velocity, v	0.002 ... 10 m/s
Stroke, Δx	0.5 mm ... continuous
Frequency, ν	0.1 ... 10 s ⁻¹
Normal load, F_N	5 ... 1000 N
Test chamber pressure, p	1×10^{-4} ... 1000 mbar
Temperature, T	-269 ... 23 °C
Surrounding medium	LHe, LH ₂ , LN ₂ , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



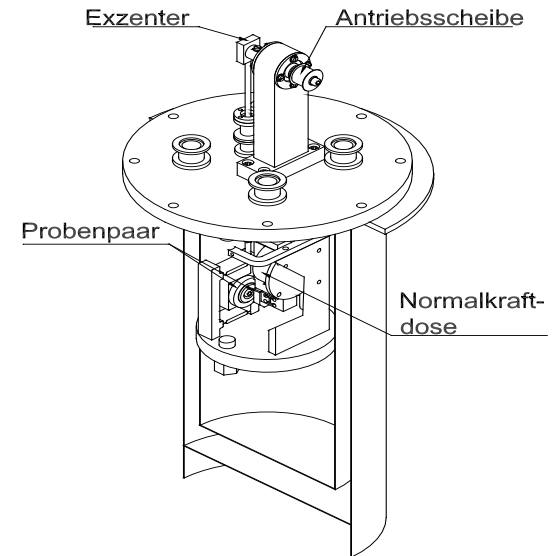
CT3 Cryotribometer

Name	CT3
Type of motion	Unidirectional; reciprocating
Sliding velocity, v	0.002 ... 10 m/s
Stroke, Δx	1 mm ... continuous
Frequency, ν	0.1 ... 10 s ⁻¹
Normal load, F_N	5 ... 1000 N
Test chamber pressure, p	1×10^{-4} ... 18000 mbar
Temperature, T	-269 ... 23 °C
Surrounding medium	LHe, LH ₂ , LN ₂ , LCH ₄ , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



CT4 Cryotribometer

Name	CT4
Type of motion	oscillation
Stroke, Δx	0.5 ... 2 mm
Frequency, ν	0.1 ... 10 s ⁻¹
Normal load, F_N	0.5 ... 20 N
Test chamber pressure, p	1×10^{-5} ... 1000 mbar
Temperature, T	-196 ... 23 °C
Surrounding medium	LN ₂ , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



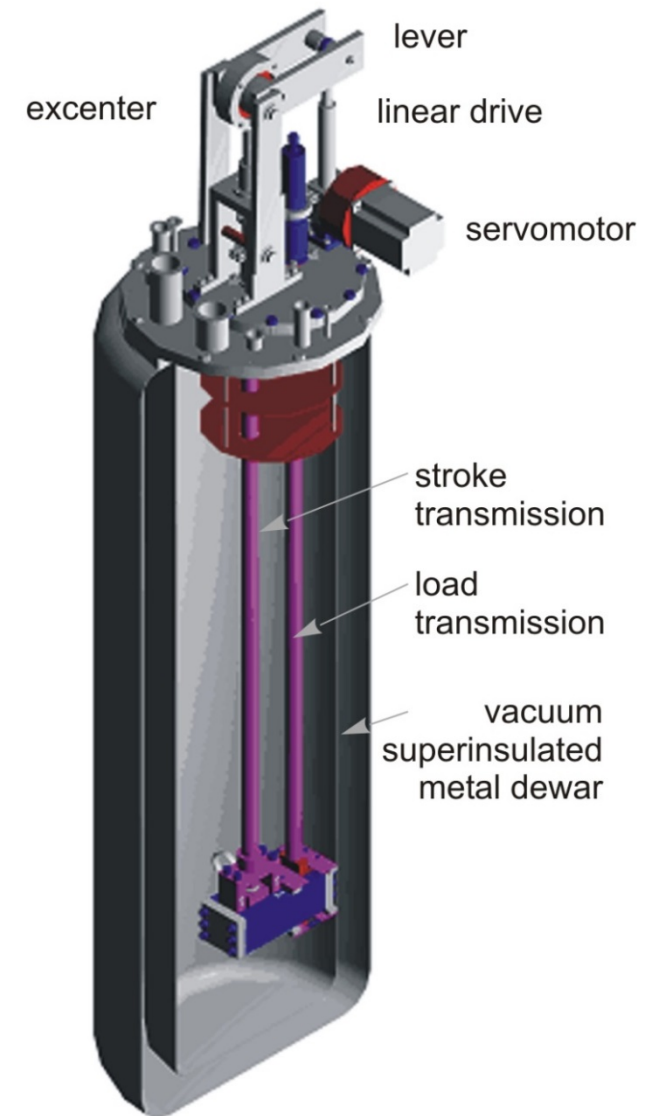
CT5 Cryotribometer

Name	CT5
Type of motion	rotation
Sliding velocity, v	0.02 ... 1 m/s
Normal load, F_N	1 ... 10 N
Test chamber pressure, p	1×10^{-4} ... 1000 mbar
Temperature, T	-269 ... 23 °C
Surrounding medium	LHe, LN ₂ , ambient air, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



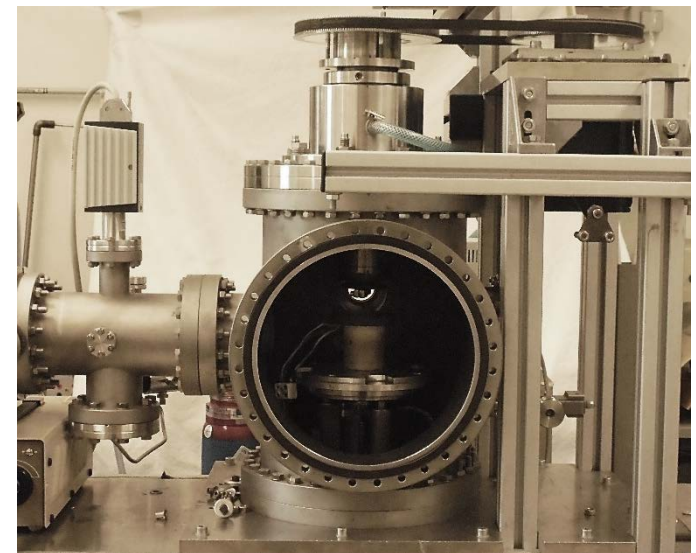
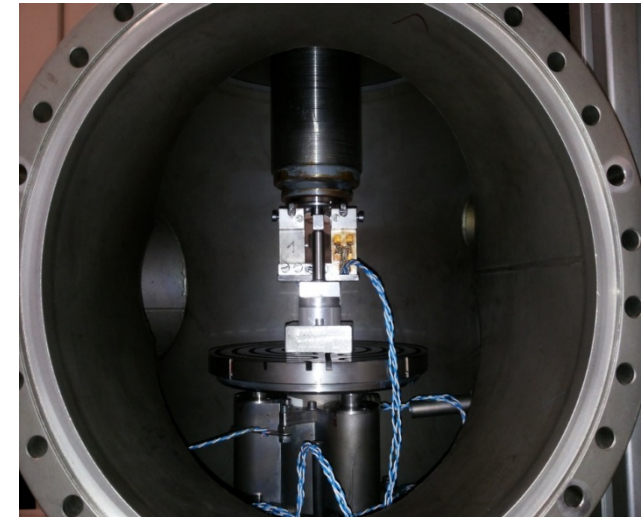
CT6 Cryotribometer

Name	CT6
Type of motion	oscillation
Stroke, Δx	2 mm
Frequency, ν	$< 0.01 \text{ s}^{-1}$
Normal load, F_N	3 ... 150 kN
Test chamber pressure, p	$1 \times 10^{-4} \dots 1000 \text{ mbar}$
Temperature, T	$-269 \dots 23 \text{ }^\circ\text{C}$
Surrounding medium	LHe, LN_2 , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)

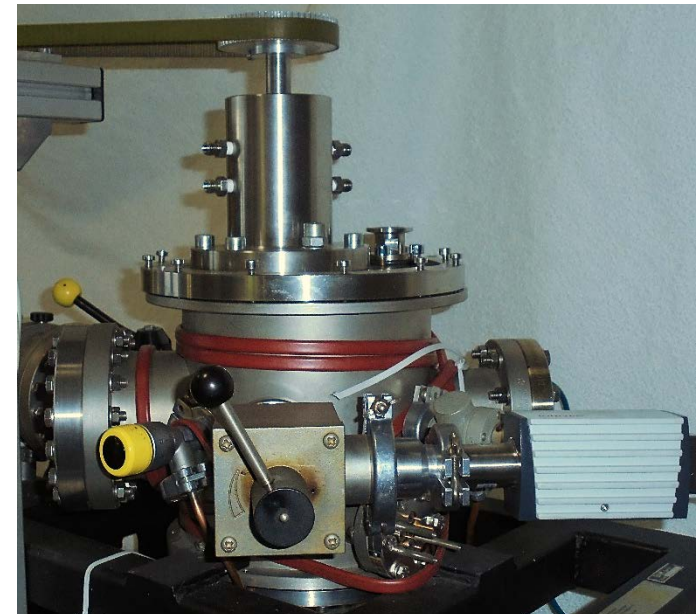


VT1 Vacuumtribometer

Name	VT1
Type of motion	Unidirectional; reciprocating
Sliding velocity, v	0.001 ... 10 m/s
Stroke, Δx	0.5 mm ... continuous
Frequency, ν	0.1 ... 25 s ⁻¹
Normal load, F_N	1 ... 500 N
Test chamber pressure, p	4×10^{-6} ... 1000 mbar
Temperature, T	-80 ... 600 °C
Surrounding medium	ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



Name	VT2
Type of motion	rotation
Velocity, v	0.1 ... 5 m/s
Normal load, F_N	1 ... 50 N
Test chamber pressure, p	2×10^{-5} ... 1000 mbar
Temperature, T	ambient
Surrounding medium	H ₂ , ambient air, vacuum, inert gases
Tribological quantities	coefficient of friction (COF), linear wear (W)



PT1 Pressurized tribometer

Name	PT1
Type of motion	oscillation
Stroke, Δx	0.001 ... 0.5 mm
Frequency, ν	0.1 ... 20 s ⁻¹
Normal load, F_N	1 ... 10 N
Test chamber pressure, p	1 ... 120 bar
Temperature, T	ambient
Surrounding medium	H ₂ , CH ₄ , ambient air, inert gases
Tribological quantities	coefficient of friction (COF)

