

Rheometer accessories

Overview coaxial cylinder geometries

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For the Thermo Scientific™ HAAKE™ MARS™ iQ/iQ Air, 40/60 and Thermo Scientific™ HAAKE™ Viscotester™ iQ Rheometers a broad range of coaxial cylinder geometries is available. Coaxial cylinder geometries consist of a cylindrical rotor (Figure 1) and a corresponding cup. The rotor is connected to the drive shaft of the rheometer motor and transfers the stress or strain signal to the sample. The cup is the static part of the geometry and attached to the temperature control module of the rheometer. This type of setup is also referred to as Searl geometry. Different types of coaxial cylinder geometries are available. These include:

- geometries according to DIN 53019/ISO 3219 - rotors with a conical tip
- recessed end coaxial cylinder geometries
- double gap coaxial cylinder geometries
- Mooney-Ewart coaxial cylinder geometries*

All standard rotors for coaxial cylinder geometries consist of:

- quick fit coupling for easy mounting
- automatic rotor recognition including an automatic transfer of the relevant geometry parameters to the rheometer control software
- ceramic shaft with low heat conductivity for fast temperature setting and lower temperature gradient within the sample
- integrated fluid reservoir as part of a solvent trap, when used with a sample cover¹
- a cylindrical part made of titanium** for low inertia and high chemical resistance

*Not available for the HAAKE Viscotester iQ Rheometers.

**Other materials available upon request.

Depending on the temperature control module utilized with the rheometer, coaxial cylinder geometries in two different sizes are available:

- For temperature modules with a 32 mm inlet for the measuring cups. For small sample volume and shorter temperature setting times (TM-PE-C32 / TM-PE-C32 Air / TM-LI-C32)
- For temperature control modules with a 48 mm inlet for the measuring cups. For very low viscous materials or inhomogeneous samples (TM-PE-C48 / TM-LI-C48)



Figure 1. Different rotors for coaxial cylinder geometries, from top to bottom double gap rotor, recessed bottom rotor, large DIN rotor and small DIN rotor.

For achieving correct and reproducible measurement results, it is essential to fill the correct amount of sample into the cup of the coaxial cylinder geometry. For this, each concentric cylinder rotor (except for the Mooney Ewart rotor) is delivered with a corresponding level gauge which allows for a quick and easy determination of the correct fill-level and thus the correct sample volume (Figure 2).

Besides coaxial cylinder geometries with a smooth surface finish, special profiled versions are available (Figure 3). Profiled coaxial cylinder geometries are used to prevent slippage, for instance when the tested materials contains larger particles. For materials that show instabilities and phase separation due to particle sedimentation, a double gap geometry with helical grooves is available. Suspended particles are constantly moved upwards during the rotational motion of this rotor. By selecting the correct rotational speed a homogeneous distribution of the particles can be maintained.

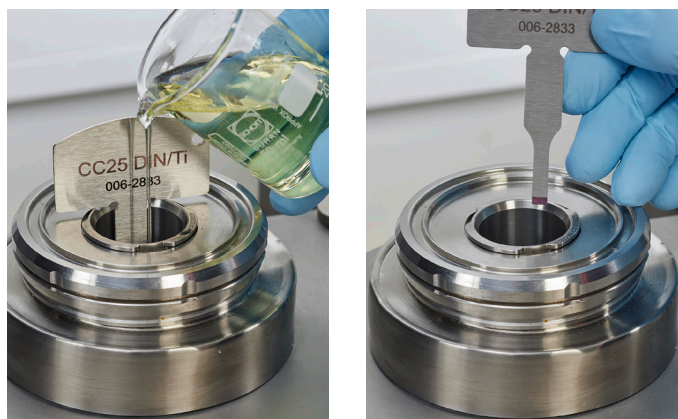


Figure 2. Level gauge to determine the correct sample volume.



Figure 3. Coaxial cylinder geometry with profiled surface finish (left). Double gap measuring geometry with helical grooves.

Reference

1. Küchenmeister-Lehrheuer C., et al, Overview sample covers with integrated solvent trap, Thermo Fisher Scientific Product Information P035.

Ordering information

Measuring geometries for temperature modules TM-XX-C32 (with inner diameter 32 mm), XX: PE-Peltier, LI-Liquid

	Rotor Diameter	25 mm	16 mm	10 mm	
According to DIN 53019 / ISO 3219	Rotor	222-2125	222-2094	222-2095	
	Cup	222-1956	222-1972	222-1971	
	Gaskets***	222-1993	222-1992	222-1292	
	Level gauge****	222-2297	222-2298	222-2299	
	Rotor Diameter	26 mm	24 mm	20 mm	26 mm profiled surface
Rotor with recessed bottom	Rotor	222-2098	222-2097	222-2096	222-2192
	Cup	222-1976	222-1976	222-1976	222-2193
	Gaskets***	222-1992	222-1992	222-1992	222-1992
	Level gauge****	222-2300	222-2301	222-2302	222-2304
	Rotor Diameter (outer)	27 mm			
Double gap geometry	Rotor	222-2099			
	Cup	222-1980			
	Gaskets***	222-1992			
	Level gauge****	222-2303			
	Rotor Diameter	25 mm			
Double gap geometry	Rotor	222-2205			
	Cup	222-1982			
	Gaskets***	222-1992			

Measuring geometries for temperature modules TM-XX-C48 (with inner diameter 48 mm), XX: PE-Peltier, LI-Liquid

	Rotor Diameter	40 mm	25 mm		
According to DIN 53019 / ISO 3219	Rotor	222-2168	222-2125		
	Cup	222-2169	222-2182		
	Gaskets***	222-1290	222-1993		
	Level gauge****	222-2305	222-2297		
	Rotor Diameter	41 mm	38 mm	31 mm	38 mm profiled surface
Rotor with recessed bottom	Rotor	222-2122	222-2123	222-2124	222-2149
	Cup	222-2170	222-2170	222-2170	222-2183
	Gaskets***	222-1290	222-1290	222-1290	222-1290
	Level gauge****	222-2309	222-2310	222-2311	222-2312
	Rotor Diameter (outer)	41 mm	43 mm	41 mm rotor with helical grooves	
Double gap geometry	Rotor	222-2133	222-2134	222-2135	
	Cup	222-2171	222-2171	222-2171	
	Gaskets***	222-1992	222-1992	222-1992	
	Level gauge****	222-2306	222-2307	222-2308	

***Set of 10 pcs., made of Viton.

****Spare part, is part of the standard content of the corresponding rotor.

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