

Rheometers

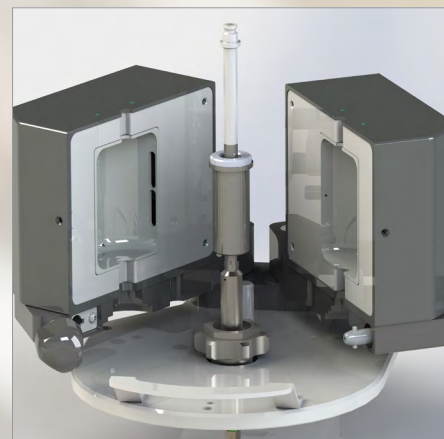


Figure 1: CC20 DIN-O/SS measuring geometry in combination with TM-CR-O450 for HAAKE MARS iQ Rheometer series.

Coaxial cylinder measuring geometry for HAAKE MARS Rheometers with temperature chamber

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Keywords

HAAKE MARS Rheometers, controlled test chamber (CTC), TM-CR-O450 temperature chamber, coaxial cylinder measuring geometry, DIN 53019/ISO 3219

The CC20 DIN-O/SS measuring geometry is a coaxial cylinder setup available for the Thermo Scientific™ HAAKE™ MARS™ 40 & 60 Rheometers in combination with the controlled test chamber (CTC) and the HAAKE MARS iQ Rheometer series in combination with the TM-CR-O450 temperature module. This measuring geometry allows testing of low and medium viscous fluids over a wide temperature range. The design and dimensions of the CC20 DIN-O/SS geometry are according to the DIN 53019/ISO 3219 standard. The setup consists of a rotor, a cup with lid and a lower shaft. The rotor and cup dimensions are shown in Table 1 and Figure 2. The measuring cups CCB20 DIN-CTC/SS and CCB20 DIN-O/SS are mounted on a base plate as lower part of the geometry. The measuring ranges of the CC20 DIN-O/SS geometry for viscosity vs. shear rate are shown for a HAAKE MARS 60 and a HAAKE MARS iQ Air Rheometer in Figure 3. Figure 4 shows the results of a viscosity measurement for silicon oil from 30 °C to 300 °C. For the performed test, the temperature was increased in steps of 20 °C at a constant shear rate of 100 s⁻¹.

Rotor	
Mass m (g)	118.8
Material	Ceramic shaft
Inertia (kg m ²)	3.3×10^{-6}
Radius R_i	10.00
Length L	30.00
Clearance to bottom (mm)	4.20
Cup	
Radius R_a (mm)	10.875
Material	Stainless steel 1.4401
Ratio of Radii R_a/R_i	1.0847
Gap $R_a - R_i$ (mm)	0.85
Sample volume /cm ³	8.2
Calculation factors	
A (Pa/Nm)	48230
M (s ⁻¹ /rad ⁻¹)	12.29

Table 1: Dimensions and materials for a CC20 DIN-O/SS measuring geometry for CTC/TM-CR-O450.

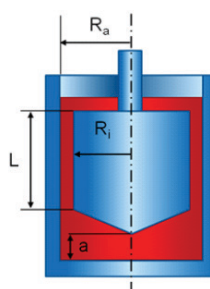


Figure 2: Rotor and cup dimensions.

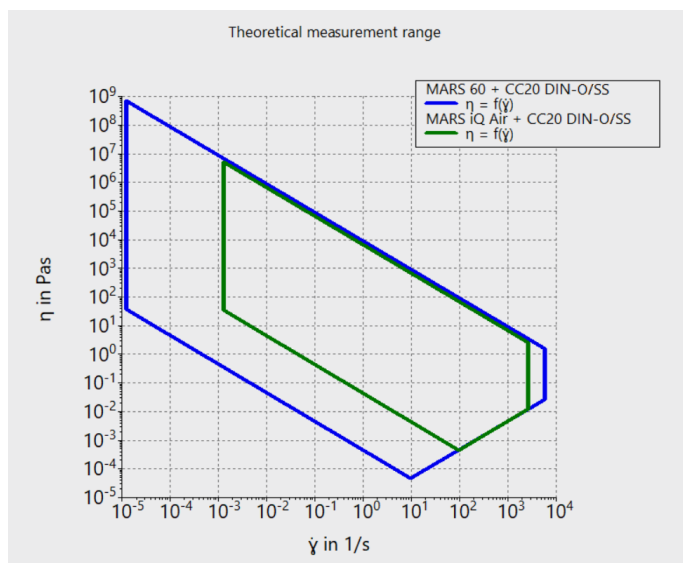


Figure 3: Measurement range for viscosity η vs. shear rate $\dot{\gamma}$ of the CC20 DIN-O/SS geometry for HAAKE MARS iQ Air and HAAKE MARS 60 rheometer models.

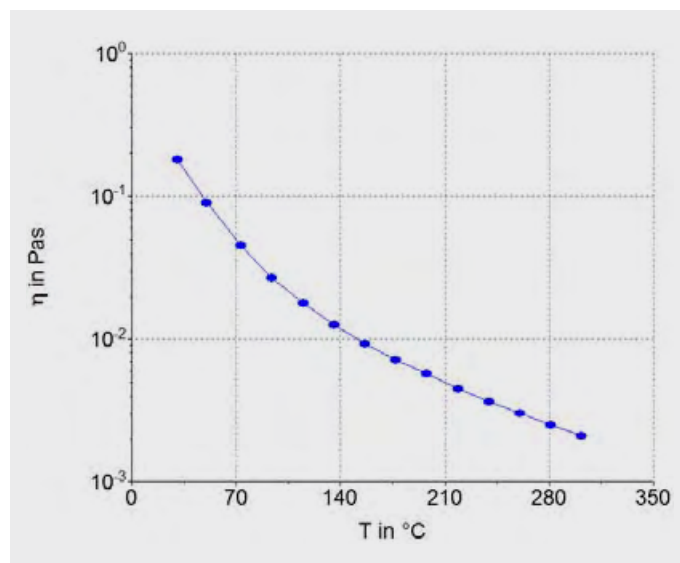


Figure 4: Viscosity η as a function of temperature T for a silicon oil under a constant shear rate of 100 s^{-1} .

Ordering information

Description	Cat. No
For HAAKE MARS iQ Rheometer Series with TM-CR-O450	
Universal lower holder for measuring geometries	222-2531
Measuring cup CCB20 DIN-O/SS	222-2531
Rotor CC20 DIN-O/SS	222-2296
For HAAKE MARS 40 & 60 Rheometer with CTC	
Measuring cup CCB20 DIN-CTC/SS	222-2295
Rotor CC20 DIN-O/SS with holder	222-2296
Optional accessories for MARS 40 & 60 for convenient exchange of geometries	
Triangular adapter plate	222-1856
Temperature sensor for lower shaft	222-1769

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