



Rheology Solutions

Rheology Solutions is the sole Australian distributor of this product range and we welcome the opportunity of discussing your application requirements.

*We hope the information you are seeking is contained within this file.
If you have any questions, or require further information please contact us.
We look forward to being of further service.*

Regards from the Team at Rheology Solutions.

RHEOLOGY SOLUTIONS PTY LTD. ACN 082 479 632

HEAD OFFICE: 15-19 Hillside Street, Bacchus Marsh, Victoria 3340 Australia. PO Box 754, Bacchus Marsh, Victoria 3340 Australia.

Telephone: +61 3 5367 7477 **Facsimile:** +61 3 5367 6477 **Email:** info@rheologysolutions.com **Website:** www.rheologysolutions.com

Double gap geometry for pressure cell D400/300

Cornelia Küchenmeister-Lehrheuer and Jint Nijman, Thermo Fisher Scientific, Material Characterization Products, Germany

Key-words

- Thermo Scientific HAAKE MARS
- Thermo Scientific HAAKE RheoStress
- Pressure cell D400/300
- Double gap cylinder geometry

A new measuring geometry for the pressure cell D400/300, which extends the measuring range down to lower viscosities, is now available. This double gap cylindrical geometry PZ DG 34 Ti, as schematically illustrated in Fig. 1, consists of two parts. The inner part - designed as an insert – is at the same time the bottom lid of the pressure cell and is equipped with two ports: One port for filling the sample into the cell and one port for adapting a temperature sensor to monitor the temperature of the sample during the measurement.

The rotating upper part of the measuring geometry (the rotor) is supported by two sapphire bearings within the pressure cell. The inner magnet of the magnet-coupling is mounted on the rotor. The inner magnet is driven by the outer magnet, which is mounted on the drive shaft of the measuring head of the rheometer.

All the main parts of pressure cell (i.e. the main body of the cell and the upper lid) as well as the measuring geometry (i.e. the rotor and the bottom lid of the cell) are made out of titanium. Other parts of the pressure cell which may come in contact with the sample (e.g. ports, port-adapters, the rupture disk unit, pressure and temperature sensor, etc.) are NOT made out of titanium. However, these parts can be ordered in special titanium versions when needed.

The inner gap of the double gap measuring geometry is 1.6 mm. Therefore suspensions with particle sizes up to 0.5 mm can be measured. The double gap measuring geometry is especially designed for measuring low-viscous samples under pressures up to 400 bar and temperatures up to 300 °C. Typical oil industry samples are low-viscous crude oil, drilling fluids, drilling muds. In the food industry this cell is used for simulating production or conservation processes of dairy products.

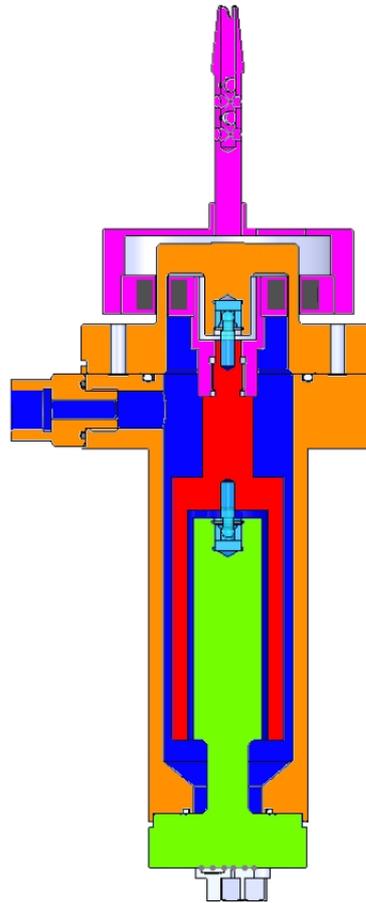


Fig. 1: Double gap geometry

The dimensions of the new double gap geometry are:

- $R_1 = 10.35$ mm (radius of the insert),
- $R_2 = 11.95$ mm (inner radius of the rotor),
- $R_3 = 16.90$ mm (outer radius of the rotor),
- $R_4 = 19.50$ mm (inner radius of the measuring cup) and
- $L_1 = 67.60$ mm (height of the inner measuring gap),
- $L_2 = 80.00$ mm (height of the outer measuring gap).

The following geometry factors were calculated from these dimensions:

- $M_{\text{Factor}} = 8.020$ (1/s) / (rad/s) and
- $A_{\text{Factor}} = 4897$ Pa/Nm.



Fig. 2: Double gap geometry PZ DG34 Ti consisting of the lower part / bottom lid of the cup (left) and rotor / upper part (right)

Order information

222-2016 Double gap cylinder geometry PZ DG34 Ti for pressure cell D400/300

Necessary accessories:

222-1706 Pressure cell D400/300 (up to 400 bar and 300°C), made of titanium, for HAAKE rheometers: MARS, RheoStress 6000 or predecessor models

Material Characterization

International/Germany

Dieselstr. 4,
76227 Karlsruhe
Tel. +49(0)721 40 94-444
info.mc.de@thermofisher.com

Benelux

Tel. +31 (0) 76 5 87 98 88
info.mc.nl@thermofisher.com

China

Tel. +86 (21) 68 65 45 88
info.mc.china@thermofisher.com

France

Tel. +33 (0) 1 60 92 48 00
info.mc.fr@thermofisher.com

India

Tel. +91 (20) 66 26 7000
info.mc.in@thermofisher.com

Japan

Tel. +81 45 453 9167
info.mc.jp@thermofisher.com

United Kingdom

Tel. +44 (0) 1606 54 81 00
info.mc.uk@thermofisher.com

USA

Tel. 603 436 9444
info.mc.us@thermofisher.com

www.thermoscientific.com/mc

P-036_07.07.2011

© 2011 Thermo Fisher Scientific Inc.
All rights reserved. This document is
for informational purposes only and is
subject to change without notice.