



**Prescott**  
instruments

# Rheoline Multi Function Rheometer

Utilising a new generation In-line Servo Motor coupled with digital servo drive technology, the **Rheoline Multi Function Rheometer** has great flexibility and can offer a wide range of test conditions. The instrument can be used firstly at lower temperatures and frequencies to study the processability of polymers, secondly as a standard MDR and thirdly as a dynamic mechanical analyser to evaluate the cured properties of materials.

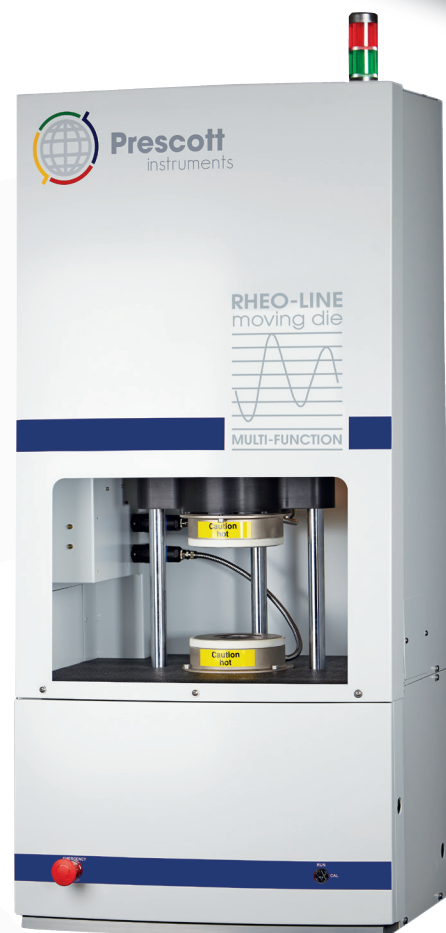
The temperature control of the dies is better than its rivals, giving an impressive variation of  $\pm 0.03$  degrees from the set point.

The instrument comes with a set of pre-programmed tests and allows full flexibility giving the user complete control of the test stages. Tests can be in the form of standard MDR mode, frequency sweep, strain sweep, or temperature sweep, or indeed any combination of these parameters.

The response of a specimen to a sinusoidal deformation can best exhibit the dynamic properties of an elastomer. The elastic component of the elastomer is responsible for the in-phase stress, while the viscous component is responsible for the out-of-phase stress. The amount by which the strain response lags the resultant of the two stresses (in-phase and out-of-phase) is known as the phase or loss angle,  $\delta$ . The more viscous an elastomer, the greater the phase or loss angle. The tangent of this angle " $\tan \delta$ ," in the simplest terms, is the ratio of the viscous modulus to the elastic modulus.

## Parameters Calculated

- » Elastic Torque,  $S'$
- » Viscous Torque,  $S''$
- » Complex Torque,  $S^*$
- » Pressure P
- » Loss Angle,  $\delta$
- » Storage Shear Modulus,  $G'$
- » Loss Shear Modulus,  $G''$
- » Complex Shear Modulus,  $G^*$
- » Loss Factor,  $\tan \delta$
- » Dynamic Complex Viscosity,  $\eta^*$
- » Real Dynamic Viscosity,  $\eta'$



Superior motor technology ensures accuracy and reproducibility



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# Rheo-Line Multi Function Rheometer

## Technical Specifications

<b>Standards</b>	Conforms to: - ASTM D5289 - Moving Die Rheometer - ASTM D6204 - Processability of uncured rubber - ASTM D6601 - Cure and after cure dynamic properties
<b>Die System</b>	Bi-conical, fully sealed
<b>Die Gap</b>	0.45mm nominal
<b>Torque Device</b>	Reaction transducer in upper platen
<b>Closing System</b>	Soft closing to reduce breakage of film and distortion of sample
<b>Temperature Control</b>	3 term PID, control accuracy to 0.03 °C
<b>Temperature Range</b>	Room temperature to 250 °C
<b>Drive System</b>	In line servo-motor and Aerotech digital controller
<b>Frequency Range</b>	0.01Hz to 40 Hz
<b>Strain Range</b>	0.1% to 5040%
<b>Calibration Device</b>	Torsion spring
<b>Electrical</b>	Single Phase, 220 / 240v 50Hz, or 110v 60Hz
<b>Pneumatics</b>	Filtered Air 4.2 Kg/cm (60 Psi)
<b>Torque Units</b>	In/Lbs or DNm
<b>Temperature Units</b>	Celsius or Fahrenheit
<b>Pressure Units</b>	Lb/sq.in or Kg/sq.cm
<b>Time Units</b>	Min/Seconds or Minutes/Decimal
<b>PC Specification</b>	Pentium processor, Fully Networkable
<b>Data Format</b>	All data stored in accessible format allowing easy export to all other packages: SQL, Access
<b>Optional Extras Available:</b>	- Auto loading module (see Automated Rheo-Line Moving Die Rheometer) - MDR Sample Cutter - Flexi Reports

» The Rheo-Line Multi Function Rheometer is available as a stand alone instrument, or it can be supplied with Autoloader facilities, please contact us for further information.



It is strongly recommended that samples are prepared with an **Automatic Volumetric Cutter** which is available from Prescott Instruments Ltd. Please see **Volumetric Sample Cutter (MDR)** Product Information leaflet for more details.



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