

DHR | SPECIFICATIONS

Technical Specifications

Specification	HR 30	HR 20	HR 10
Bearing Type, Thrust	Magnetic	Magnetic	Magnetic
Bearing Type, Radial	Porous Carbon	Porous Carbon	Porous Carbon
Motor Design	Drag Cup	Drag Cup	Drag Cup
Minimum Torque (nN.m) Oscillation	0.3	1	5
Minimum Torque (nN.m) Steady Shear	1	3	5
Maximum Torque (mN.m)	200	200	200
Torque Resolution (nN.m)	0.05	0.1	0.1
Minimum Frequency (Hz)	1.0E-7	1.0E-7	1.0E-7
Maximum Frequency (Hz)	100	100	100
Minimum Angular Velocity ^[1] (rad/s)	0	0	0
Maximum Angular Velocity (rad/s)	300	300	300
Displacement Transducer	Optical Encoder	Optical Encoder	Optical Encoder
Optical Encoder Dual Reader	Standard	Standard	N/A
Displacement Resolution (nrad)	2	2	10
Step Time, Strain ^[2] (ms)	15	15	15
Step Time, Rate ^[2] (ms)	5	5	5
Normal/Axial Force Transducer	FRT	FRT	FRT
Maximum Normal Force (N)	50	50	50
Normal Force Sensitivity (N)	0.005	0.005	0.01
Normal Force Resolution (mN)	0.5	0.5	1

DMA Mode

Specifications	
Motor Control	Force Rebalance Transducer
Minimum Force in Oscillation	3 mN
Maximum Axial Force	50 N
Minimum Displacement in Oscillation	0.01 μm
Maximum Displacement in Oscillation	100 μm
Axial Frequency Range	6×10^{-5} rad/s to 100 rad/s (10^{-5} Hz to 16 Hz)

[1] Zero in controlled stress mode. Controlled rate mode depends on duration of point being measured and sampling time.

[2] Results at 99% of commanded value

Instrument Features

Features	HR 30	HR 20	HR 10
Optical Encoder Dual Reader	●	●	—
DMA Mode	●	○	—
True Position Sensor (TPS)	●	●	●
Controlled stress (steady, transient, oscillation)	●	●	●
Controlled strain (steady, transient, iterative oscillation)	●	●	●
Direct Strain (oscillation)	●	●	○
Fast data collection	●	●	—
Normal Force measurements with FRT	●	●	●
Axial and tack testing	●	●	○
One-Touch-Away™ Display	●	●	●
Integrated Sample Lighting	●	●	●
FastTrack	●	●	●
AutoPilot	○	○	○

● Included ○ Optional — Not Available

