List of symbols

a	Outside radius of the disc, radius of the sphere, radius of flat circular disc, radius of both the circular discs (m)
b	Inside radius of the disc (m)
b_1	Thickness of a fissure (m)
c	Maximum asperity deviation from nominal film height (m)
C	Dimensionless surface roughness parameter, dimensionless radial surface roughness parameter
C_n	Unknown constants
D_c	Mean particle size (m)
D_s	Mean solid size (m)
E	Expectancy operator
$E(p)$	Mean film pressure (N m^{-2})
$E(W)$	Mean load carrying capacity (N)
FF	Ferrofluid
f	Probability density distribution function
h	Film thickness (m)
$\bar{h}$	Dimensionless film thickness (m)
h_m	Nominal minimum film thickness at $r = 0$ (m)
$\bar{h}_m$	Dimensionless nominal minimum film thickness (m)
h_n	Nominal film height (m)

h_0	Central film thickness at time t = 0,initial film thickness (m)
h_s	Deviation of film height from nominal level (m)
(h_0 / h)	Dimensionless minimum film thickness parameter
$\dot{h}, \dot{h}_0$	$\frac{dh}{dt}$ or $\frac{dh_0}{dt}$ Squeeze velocity (m s^{-1})
H	Strength of variable magnetic field, strength of oblique radially VMF, magnetic field strength (A m^{-1})
H	Variable magnetic field vector
J_0	Bessel function of the first kind of order zero
J_1	Bessel function of the first kind of order one
l, H^*	Thickness of the porous matrix, Width of the upper porous facing (m)
L	Dimensionless thickness of the porous matrix
M	Magnetization vector
MF	Magnetic fluid
p	Film pressure (N m^{-2})
$\bar{p}$	Dimensionless film pressure
$P,\ p^*$	Fluid pressure in the porous region, pressure difference at the film porous interface (N m^{-2})
q	Fluid velocity vector
r	Radial coordinate (m)
R	Dimensionless radial coordinate
S	Slip parameter (m^{-1})
$\bar{s}$	Dimensionless slip parameter

t	Time (s)
V	Dimensionless squeeze velocity parameter
VMF	Variable magnetic field
u, v, w	Radial, tangential and axial (or transverse) velocity components of **q**
$\overline{u}$, $\overline{w}$	Radial and axial velocity components of fluid velocity in the porous matrix
w.r.t	With respect to
W	Load carrying capacity (N)
$\overline{W}$	Dimensionless load carrying capacity
$\overline{W}_{\mathrm{e}}$	Dimensionless load-carrying capacity for exponential upper disc squeeze film-bearing
$\overline{W}_{\mathrm{s}}$	Dimensionless load-carrying capacity for secant upper disc squeeze film-bearing
$\overline{W}_{is}$	Dimensionless load-carrying capacity for mirror image of secant upper disc squeeze film-bearing
$\overline{W}_{\mathrm{p}}$	Dimensionless load-carrying capacity for parallel upper disc squeeze film-bearing
Y_0	Bessel function of the second kind of order zero
Z	Axial coordinate (m)
$r,\ \theta, z$	Cylindrical polar coordinates

Greek symbols

α	Slip coefficient
α_n	n^{th}-Eigenvalue defined by $(4n-1)\pi/4a$

β	Curvature of the upper discs (m^{-2})
$\overline{\beta}$	βa^2, dimensionless curvature parameter
η	Fluid viscosity (Nsm^{-2})
ξ	Random variable
ρ	Fluid density ($Ns^2 m^{-4}$)
η_r	Porosity of the porous region in the radial direction
μ_0	Free space permeability (NA^{-2})
$\overline{\mu}$	Magnetic susceptibility
μ^*	Dimensionless magnetization parameter
φ, ϕ	Permeability of porous matrix , permeability of the porous facing (m^2)
Φ	Dimensionless permeability parameter
θ	Annular co-ordinate
ϕ_r, ϕ_z	Permeabilities of the porous matrix in r and z –directions, respectively (m^2)
ε	Porosity of the porous matrix
Ω_f	Ω_l / Ω_u, dimensionless rotational parameter
Ω_l	Angular speed of the lower plate, rotational velocity of the porous lower disc ($rad.s^{-1}$)
Ω_u	Angular speed of the upper sphere ,rotational velocity of the upper disc($rad.s^{-1}$)
Ω_r	$\Omega_u - \Omega_l$

τ , σ	Standard deviation
ψ_r	Dimensionless radial permeability parameter