NOMENCLATURE

The following symbols are used frequently. Other symbols are defined in the text when they are first used.

a	ratio of max. film thickness to min. film thickness, h_2/h_1.
A	x-length of bearing/plate.
A_{mn}, A'_{mn}	Fourier coefficients.
$\vec{B}$	Magnetic induction field.
B_0	applied magnetic field.
B_{mn}, B'_{mn}	Fourier coefficients.
c, c_1, c_2	magnetic parameters defined in the text.
c^*	current parameter in the annular case.
c_1^*	current parameter in the circular case.
$\vec{E} = (E_x, E_y, E_z)$	electric field vector.
$\bar{E}_z$	dimensionless z-component of the electric field.
F	frictional force.

$\bar{F}$	dimensionless frictional force.
G_{mn}	Fourier coefficients.
h	film thickness.
h_1	min. film thickness in case of slider bearing and final film thickness in case of squeeze film bearing.
h_2	max. film thickness.
h_0	initial film thickness.
$\bar{h}$	h/h_1 in case of slider bearing. h/h_0 in case of squeeze film bearing.
$\dot{h}$	dh/dt.
H	thickness of the porous facing.
H_1, H_2	thicknesses of the lower and upper layers.
$\bar{H}$, $\bar{H}_1$, $\bar{H}_2$	dimensionless quantities $\frac{H}{A}$, $\frac{H_1}{A}$, $\frac{H_2}{A}$.
$\vec{i}$	unit vector in x-direction.
I	total current.
$\vec{J} = (J_x, J_y, J_z)$	current density.
$\vec{j}$	unit vector in the y-direction.
$\vec{k}$	unit vector in the z-direction.

k, k_1, k_2	permeabilities.
L, L_1, L_2	defined in 2.(7).
m^*	porosity.
M	Hartmann number.
$\bar{M}$	max. Hartmann number.
p	fluid pressure in the film region.
P, P_1, P_2	fluid pressures in the porous regions.
$\bar{p}$	dimensionless fluid pressure in the film region.
p_0	some fixed pressure.
$\vec{q} = (u, v, w)$	fluid velocity in the film region.
$Q, Q_1, Q_2, Q_3, Q_4, Q_5$	constants of integration.
r	radial space coordinate.
r_1	outside radius of disks.
r_2	inside radius of disks.
s	magnetic field step location.
t	time.
Δt	response time.

ΔT	dimensionless response time.
T, T_1, T_2	defined in 2.(7).
u	x-component of the fluid velocity in the film region.
U	x-component of the velocity of the upper surface.
u_0	slip velocity in the x-direction.
v	y-component of fluid velocity in the film region.
v_h, v_0	values of v at y = h, 0 respectively.
V_h	normal velocity of the upper surface.
$\vec{V} = (V_x, V_y, V_z)$	fluid velocity in the lower porous region.
$\vec{V}_0 = (V_{0x}, V_{0y}, V_{0z})$	value of $\vec{V}$ when y = 0.
$\vec{V}^* = (V_x^*, V_y^*, V_z^*)$	fluid velocity in the upper porous region.
w	z-component of the fluid velocity in the film region.
w_0	slip velocity in the z-direction.
W	load capacity.
$\bar{W}$	dimensionless load capacity.

x	coordinate along the film.
$\bar{x}$	dimensionless quantity x/A.
$\bar{\bar{x}}$	x-coordinate of the centre of pressure.
y	coordinate across the film or axial coordinate.
z	coordinate perpendicular to xy-plane.
α	$(12\psi)^{1/3}$
α_0	central film thickness.
$\dot{\alpha}_0$	$d\alpha_0/dt$.
α_{01}, α_{02}	initial and final values of α_0.
β	curvature of the upper plate.
$\bar{\beta}$	curvature parameter, βr_1^2.
$\delta_{\ell 1}$	Kronecker delta.
μ	viscosity of fluid.
μ_e	magnetic permeability of fluid.
ρ	fluid density.

σ	fluid conductivity.
ψ , ψ_1 , ψ^* , ψ_0	permeability parameters.
Ω	velocity of rotation of lower disk.