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NOMENCLATURE

A	: area or interfacial area density (m ²)
C_D	: drag coefficient (-)
D	: inner pipe diameter (m)
D^*	: dimensionless number of pipe inner diameter (-)
D_b	: bubble diameter (m)
D_d	: droplet diameter (m)
D_H	: hydraulic diameter (m)
f_i	: interfacial friction factors (-)
f_{wk}	: phase-wall friction factors (-)
g	: gravitational acceleration (m/s ²)
J_K	: phase superficial velocity (m/s)
$J_{L,D}$	: discharged superficial liquid velocity (m/s)
J_K^*	: Wallis dimensionless number of superficial velocity (-)
L	: characteristic length (m)
L_H	: length of horizontal leg (m)
$\dot{m}_G$	: gas mass flow rate (kg/s)
$\dot{m}_{L,D}$	: discharged liquid flow rate (kg/s)
u_K	: phase mean velocity (m/s)

Greek Letter

α	: gas void fraction (-)
G	: void fraction at the onset of slugging at the hydraulic jump near the pipe bend (-)
ρ_k	: liquid and gas density (kg/m ³)
$\tau_{L,G}$	: wall shear stresses of the gas and liquid onto the free surface
τ_{wk}	: wall shear stress (N/m ²)
τ_i	: interfacial shear stress (N/m ²)