NOTATIONS

\( \Delta H_v \) Latent heat of vaporization of water at 298.15 K
A Flow area
C Spring Index
D Mean diameter of spring coil
d Diameter of spring wire
d_1 Diameter of orifice
d_2 Diameter of 1st stage cylindrical chamber
d_3 Diameter of 2nd stage cylindrical chamber
d_c Bore diameter
G Modulus of rigidity
H Volumetric heating value
h_{iP} Enthalpy of formation per unit mole of ith product
h_{iR} Enthalpy of formation per unit mole of ith reactant
H_P Total enthalpy of products
H_R Total enthalpy of reactants
K Wahl's factor
l_1 Load arm
l_2 Effort arm
l_3 Length of 1st cylindrical chamber of pressure reducer
l_c Stroke
m Mass flow per unit time
M_g Molecular weight of gas,
n_{iP} Number of moles of ith product
n_{iR} Number of moles of ith reactant
P Spring force
p Gas pressure
p_1 Gas pressure at valve inlet of 1st chamber
p_2 Pressure of gas filled inside the 1st chamber
Q Heat liberated
R Gas constant
T Temperature
V Velocity
v_1 Volume of valve chamber
v_2 Volume of 1st chamber of pressure reducer
\( v_2' \) Actual volume for gas trap in 1\textsuperscript{st} stage chamber
\( v_3 \) Volume of 2\textsuperscript{nd} chamber of pressure reducer
\( V_{\text{cyl}} \) Volume of each cylinder of engine
\( W \) Gas force
\( Z_g \) Compressibility factor
\( \delta \) Deflection
\( \Delta H_{R,298}^o \) Standard heat of reaction at standard states
\( \eta_{\text{bth}} \) Brake Thermal Efficiency
\( \eta_{\text{i th}} \) Indicated Thermal Efficiency
\( \eta_{\text{mech}} \) Mechanical Efficiency
\( \eta_{v} \) Volumetric Efficiency
\( \lambda \) Air equivalence ratio or air number
\( \rho \) Fluid density
\( \tau \) Maximum shear stress
\( \phi \) Equivalence Ratio