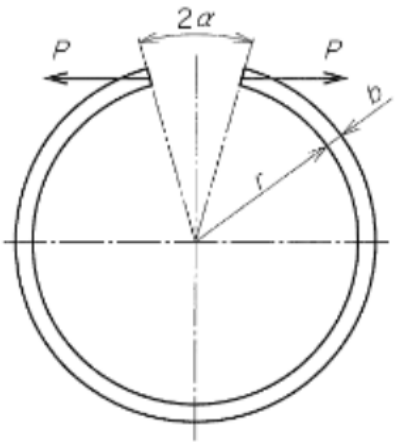
CALCULATION FORMULAS FOR RETAINING RINGS

(According to JIS B 2713)



$$P = \frac{Ebt^3}{12r^3}\left[(\pi-\alpha)(2\cos^2\alpha+1)+\frac{3}{2}\sin 2\alpha\right]^{-1}\delta \quad \cdots\cdots (3)$$

$$\sigma = \frac{6r(\cos\alpha+1)}{bt^2}P \quad \cdots\cdots (4)$$

In which:

P: Load applied to the spring (N)

E: Longitudinal elastic modulus (MPa)

b: Material's width (mm)

t: Material's thickness (mm)

r: Ring's radius (mm)

α: Gap's angle (see the above illustration) (rad)

δ: Spring's deflection (mm)

σ: Bending stress (MPa)