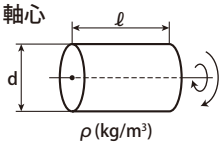
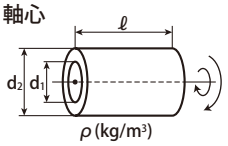
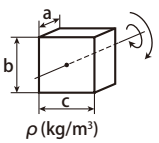
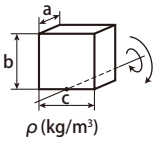
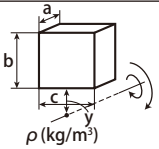
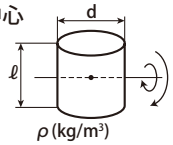
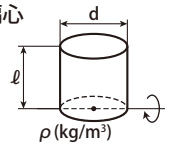
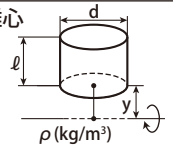
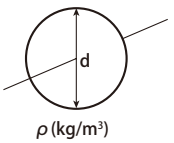
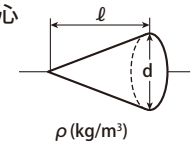
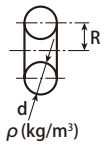
慣性モーメント・GD² の求め方

●慣性モーメント・GD²の求め方

回転軸の位置	形 状	質 量 M(kg)	慣性モーメント J(kg・m²)	GD² GD²(kgf・m²)
軸心  ρ(kg/m³)	円柱	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
軸心  ρ(kg/m³)	円筒	$\frac{1}{4}\cdot\pi\cdot(d_1^2-d_2^2)\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$
軸心  ρ(kg/m³)	四角	a・b・c・ρ	$\frac{a\cdot b\cdot c}{12}\cdot(b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(b^2+c^2)\cdot\rho$
偏心  ρ(kg/m³)	四角	a・b・c・ρ	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2)\cdot\rho$
離心  ρ(kg/m³)	四角	a・b・c・ρ	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$
横中心  ρ(kg/m³)	円柱	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(4\ell+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(4\ell+3d^2)\cdot\rho$
横偏心  ρ(kg/m³)	円柱	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell^2+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell^2+3d^2)\cdot\rho$
横離心  ρ(kg/m³)	円柱	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$
軸心  ρ(kg/m³)	球	$\frac{1}{6}\cdot\pi\cdot d^2\cdot\rho$	$\frac{1}{60}\cdot\pi\cdot d^5\cdot\rho$	$\frac{1}{15}\cdot\pi\cdot d^5\cdot\rho$
軸心  ρ(kg/m³)	円錐	$\frac{1}{12}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{160}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{40}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
軸心  ρ(kg/m³)	トーラス	$\frac{1}{2}\cdot\pi^2\cdot R\cdot d^2\cdot\rho$	$\frac{\pi^2\cdot R\cdot d^2}{8}\cdot(4R^2+\frac{3d^2}{4})\cdot\rho$	$\frac{\pi^2\cdot R\cdot d^2}{2}\cdot(4R^2+\frac{3d^2}{4})\cdot\rho$

寸法：d、ℓ、a、b、c、y、R(m)
密度：ρ(kg/m³)