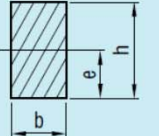
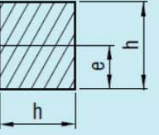
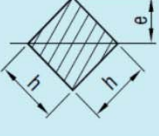
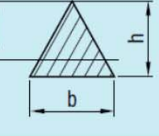
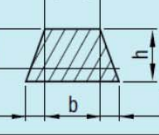
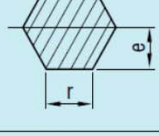
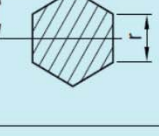
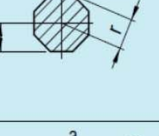
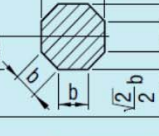
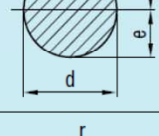

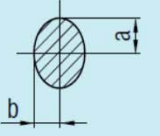
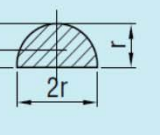
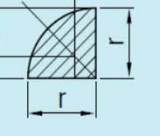
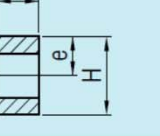
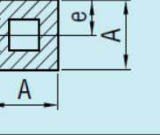
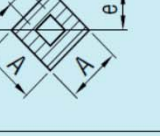
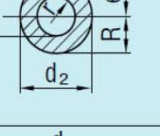
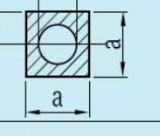
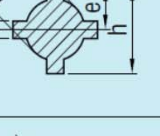
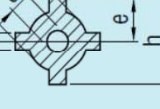


CALCULATIONS OF AREA, CENTER OF GRAVITY AND SECTIONAL SECONDARY MOMENT

Section	Sectional area A	Distance of gravitational center e	Sectional secondary moment I	Sectional coefficient Z=l/e
	bh	$\frac{h}{2}$	$\frac{bh^3}{12}$	$\frac{bh^2}{6}$
	h ²	$\frac{h}{2}$	$\frac{h^4}{12}$	$\frac{h^3}{6}$
	h ²	$\frac{h}{2}\sqrt{2}$	$\frac{h^4}{12}$	$0.1179 h^3 = \frac{\sqrt{2}}{12} h^3$
	$\frac{bh}{2}$	$\frac{2}{3}h$	$\frac{bh^3}{36}$	$\frac{bh^2}{24}$
	$(2b+b_1) \frac{h}{2}$	$\frac{1}{3} \times \frac{3b+2b_1}{2b+b_1} h$	$\frac{6b^2+6bb_1+b_1^2}{36(2b+b_1)} h^3$	$\frac{6b^2+6bb_1+b_1^2}{12(3b+2b_1)} h^2$
	$\frac{3\sqrt{3}}{2} r^2$	$\sqrt{\frac{3}{4}} r = 0.866 r$	$\frac{5\sqrt{3}}{16} r^4 = 0.5413 r^4$	$\frac{5}{8} r^3$
	$= 2.598 r^2$	r	$\frac{5\sqrt{3}}{16} r^3 = 0.5413 r^3$	$\frac{5\sqrt{3}}{16} r^3 = 0.5413 r^3$
	2.828 r ²	0.924 r ²	$\frac{1+2\sqrt{2}}{6} r^4$ $= 0.6381 r^4$	0.6906 r ³
	0.8284 a ²	$b = \frac{a}{1+\sqrt{2}}$ $= 0.4142 a$	0.0547 a ⁴	0.1095 a ³
	$\pi r^2 = \frac{\pi d^2}{4}$	$\frac{d}{2}$	$\frac{\pi d^4}{64} = \frac{\pi r^4}{4}$ $= 0.0491 d^4$ $= 0.05 d^4$ $= 0.7854 r^4$	$\frac{\pi d^3}{32} = \frac{\pi r^3}{4}$ $= 0.0982 d^3$ $= 0.1 d^3$ $= 0.7854 r^3$
	$r^2 \left(1 - \frac{\pi}{4}\right)$ $= 0.2146 r^2$	e ₁ = 0.2234 r e ₂ = 0.7766 r	0.0075 r ⁴	$\frac{0.0075 r^4}{e_2}$ $= 0.00966 r^3$ $= 0.01 r^3$

Section	Sectional area A	Distance of gravitational center e	Sectional secondary moment I	Sectional coefficient Z=l/e
	πab	a	$\frac{\pi}{4} ba^3 = 0.7854 ba^3$	$\frac{4}{\pi} ba^2 = 0.7854 ba^2$
	$\frac{\pi}{2} r^2$	e ₁ = 0.4244 r e ₂ = 0.5756 r	$\left(\frac{\pi}{8} - \frac{8}{9\pi}\right) r^4$ $= 0.1098 r^4$	Z ₁ = 0.2587 r ³ Z ₂ = 0.1908 r ³
	$\frac{\pi}{4} r^2$	e ₁ = 0.4244 r e ₂ = 0.5756 r	0.055 r ⁴	Z ₁ = 0.1296 r ³ Z ₂ = 0.0956 r ³
	b(H-h)	$\frac{H}{2}$	$\frac{b}{12} (H^3 - h^3)$	$\frac{b}{6H} (H^3 - h^3)$
	A ² - a ²	$\frac{A}{2}$	$\frac{A^4 - a^4}{12}$	$\frac{1}{6} \frac{A^4 - a^4}{A}$
	A ² - a ²	$\frac{A}{2}\sqrt{2}$	$\frac{A^4 - a^4}{12}$	$\frac{A^4 - a^4}{12A}\sqrt{2}$ $= \frac{0.1179(A^4 - a^4)}{A}$
	$\frac{\pi}{4} (d_2^2 - d_1^2)$	$\frac{d_2}{2}$	$\frac{\pi}{64} (d_2^4 - d_1^4)$ $= \frac{\pi}{4} (R^4 - r^4)$	$\frac{\pi}{32} \left(\frac{d_2^4 - d_1^4}{d_2}\right)$ $= \frac{\pi}{4} \times \frac{R^4 - r^4}{R}$
	$a^2 - \frac{\pi d^2}{4}$	$\frac{a}{2}$	$\frac{1}{12} \left(a^4 - \frac{3\pi}{16} d^4\right)$	$\frac{1}{6a} \left(a^4 - \frac{3\pi}{16} d^4\right)$
	2b(h-d) + $\frac{\pi}{4} d^2$	$\frac{h}{2}$	$\frac{1}{12} \left\{ \frac{3\pi}{16} d^4 + b(h^3 - d^3) + b^3(h-d) \right\}$	$\frac{1}{6h} \left\{ \frac{3\pi}{16} d^4 + b(h^3 - d^3) + b^3(h-d) \right\}$
	2b(h-d) + $\frac{\pi}{4} (d_1^2 - d_2^2)$	$\frac{h}{2}$	$\frac{1}{12} \left\{ \frac{3\pi}{16} (d_1^4 - d_2^4) + b(h^3 - d_1^3) + b^3(h-d_1) \right\}$	$\frac{1}{6h} \left\{ \frac{3\pi}{16} (d_1^4 - d_2^4) + b(h^3 - d_1^3) + b^3(h-d_1) \right\}$