Die Konstruktionen in Eisen

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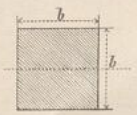
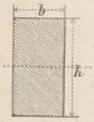
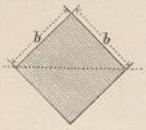
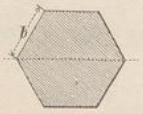
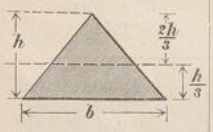
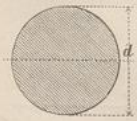
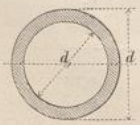
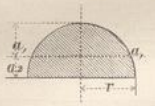
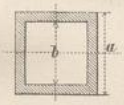
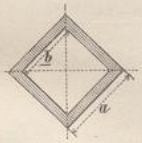
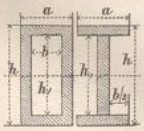
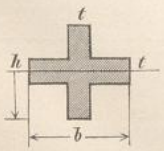
Leipzig, 1902

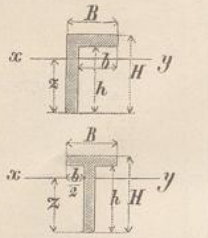
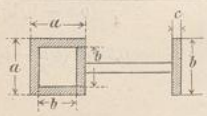
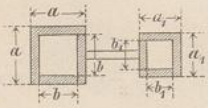
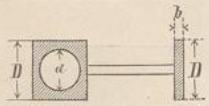
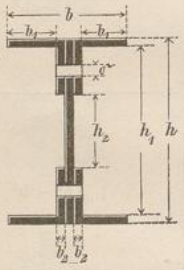
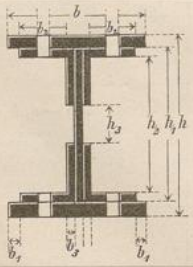
Tabelle 10. Trägheitsmomente, Widerstandsmomente und Flächeninhalte verschiedener Querschnitte

urn:nbn:de:hbz:466:1-96882

Tabelle 10. Trägheitsmomente, Widerstandsmomente und Flächeninhalte verschiedener Querschnitte.

Nr.	Querschnitt	Trägheitsmoment J	Widerstandsmoment $\frac{J}{a} = W$	Flächeninhalt des Querschnittes
1		$\frac{b^4}{12}$	$\frac{b^3}{6}$	b^2
2		$\frac{b\,h^3}{12}$	$\frac{b\,h^2}{6}$	$b\,h$
3		$\frac{b^4}{12}$	$\frac{\sqrt{2}}{12}\,b^3 = 0{,}118\,b^3$	b^2
4		$\frac{5\sqrt{3}}{16}\,b^4 = 0{,}5413\,b^4$	$\frac{5}{8}\,b^3 = 0{,}625\,b^3$	$\frac{3\sqrt{3}}{2}\,b^2 = 2{,}598\,b^2$
5		$\frac{5\sqrt{3}}{16}\,b^4 = 0{,}5413\,b^4$	$\frac{5\sqrt{3}}{16}\,b^3 = 0{,}5413\,b^3$	$\frac{3\sqrt{3}}{2}\,b^2 = 2{,}598\,b^2$
6		$\frac{1}{36}\,b\,h^3$	für $a = \frac{h}{3}$: $W = \frac{1}{12}\,b\,h^2$; für $a = \frac{2h}{3}$: $W = \frac{1}{24}\,b\,h^2$	$\frac{b\,h}{2}$
7		$\frac{\pi}{64}\,d^4 = 0{,}0491\,d^4$	$\frac{\pi}{32}\,d^3 = 0{,}0982\,d^3$	$\frac{\pi}{4}\,d^2 = 0{,}7854\,d^2$
8		$\frac{\pi}{64}(d^4 - d_1^4)$ $= 0{,}0491\,(d^4 - d_1^4)$	$\frac{\pi}{32}\,\frac{d^4 - d_1^4}{d}$ $= 0{,}0982\,\frac{d^4 - d_1^4}{d}$	$\frac{\pi}{4}(d^2 - d_1^2)$ $= 0{,}7854\,(d^2 - d_1^2)$

Nr.	Querschnitt	Trägheitsmoment J	Widerstandsmoment $\frac{J}{a} = W$	Flächeninhalt des Querschnittes
9		$\frac{\pi}{64} b h^3 = 0{,}0491\, b h^3$	$\frac{\pi}{32} b h^2 = 0{,}0982\, b h^2$	$\frac{\pi}{4} b h = 0{,}7854\, b h$
10		$\frac{\pi}{64}(b h^3 - b_1 h^3)$ $= 0{,}0491\,(b h^3 - b_1 h^3)$	$\frac{\pi}{32}(b h^2 - \frac{b_1 h_1^3}{h})$ $= 0{,}0982\,(b h^2 - \frac{b_1 h_1^3}{h})$	$\frac{\pi}{4}(b h - b_1 h_1)$ $= 0{,}7854\,(b h - b_1 h_1)$
11		$0{,}110\, r^4$	für $a_1 = 0{,}19\, r^3$ für $a_2 = 0{,}26\, r^3$	$\frac{\pi}{2} r^2 = 1{,}5708\, r^2$
12		$\frac{a^4 - b^4}{12}$	$\frac{1}{6}\frac{a^4 - b^4}{a}$	$a^2 - b^2$
13		$\frac{a^4 - b^4}{12}$ für alle Neigungen	$\frac{a^4 - b^4}{12\,a}\sqrt{2} = 0{,}1178\,\frac{a^4 - b^4}{a}$	$a^2 - b^2$
14		$\frac{a h^3 - a_1 h_1^3}{12}$	$\frac{a h^3 - a_1 h_1^3}{6 h}$	$a h - a_1 h_1$
15		$\frac{1}{12}\left\{ h^3 t + (b - t) t^3 \right\}$	$\frac{2 J}{h}$	$t (h + b - t)$

Nr.	Querschnitt	Trägheitsmoment J	Widerstandsmoment $\frac{J}{a} = W$	Flächeninhalt des Querschnittes
16		$\frac{(B H^2 - b h^2)^2 - 4 B H b h (H - h)^2}{12 (B H - b h)}$ $z = H - \frac{(B - b) H^2 + b (H - h)^2}{2 (B - b) H + 2 b (H - h)}$ Hierbei ist vorausgesetzt, daß das ⊥-Eisen gegen seitliche Ausbiegung geschützt ist.	$\frac{B H^2 - b h^2}{6} - \frac{2 B H b h (H - h)^2}{3 (B H^2 - b h^2)}$	$B H - b h$
17		$\frac{1}{12} (a^4 - b^4 + c b^3)$	$\frac{1}{6} \left(\frac{a^4 - b^4}{a} + c b^2 \right)$	$a^2 - b^2 + c b$
18		$\frac{1}{12} (a^4 - b^4 + a_1^4 - b_1^4)$	$\frac{1}{6} \left(\frac{a^4 - b^4}{a} + \frac{a_1^4 - b_1^4}{a_1} \right)$	$(a^2 - b^2) + (a_1^2 - b_1^2)$
19		$\frac{1}{4} \left(\frac{D^3 (D + b)}{3} - \frac{\pi d^4}{16} \right)$	$\frac{1}{2} \left(\frac{D^2 (D + b)}{3} - \frac{\pi d^4}{16 D} \right)$	$D^2 - \frac{d^2 \pi}{4} + b D$
20		Nietabzug näherungsweise $\frac{b h^3 - 2 . b_1 h_1^3 - 2 . b_2 h_2^3 - 3 (b - 2 b_1) h_2^2 \delta}{12}$	$\frac{b h^3 - 2 . b_1 h_1^3 - 2 . b_2 h_2^3 - 3 (b - 2 b_1) h_2^2 \delta}{6 h}$	—
21		$\frac{b h^3 - 2 . b_1 h_1^3 - 2 . b_2 h_2^3 - 2 . b_3 h_3^3}{12}$	$\frac{b h^3 - 2 . b_1 h_1^3 - 2 . b_2 h_2^3 - b_3 h_3^3}{6 h}$	—
22		$\frac{25 \delta}{3 b} \left[h^3 + \frac{3}{2} (\pi - 2) b h^2 - 3 (\pi - 3) b^2 h + \frac{9 \pi - 28}{4} b^3 \right]$ Fast völlig genau: $2{,}04 . \frac{\delta}{b} (1{,}6 h - 0{,}18 b)^2 . (1{,}6 h + 3{,}1 b)$	$\frac{2 J}{h + \delta}$ $\frac{4{,}08 \delta}{b (h + \delta)} (1{,}6 h - 0{,}18 b)^2 . (1{,}6 h + 3{,}1 b)$	—