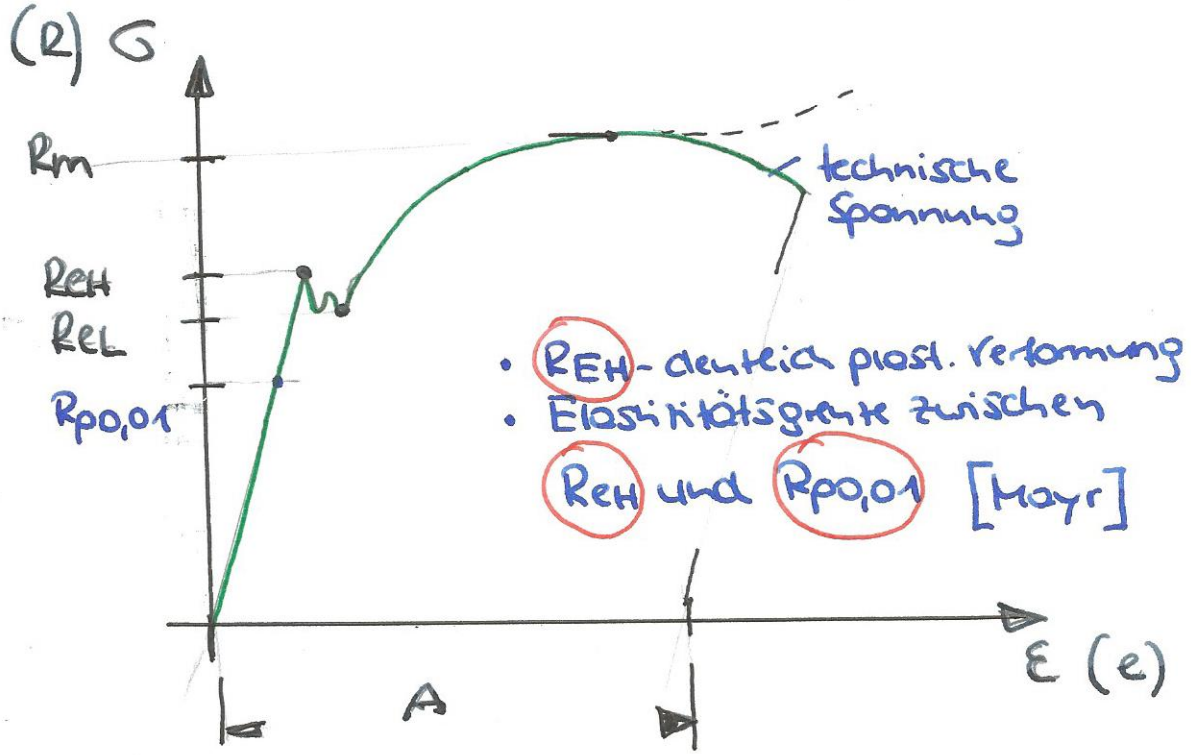
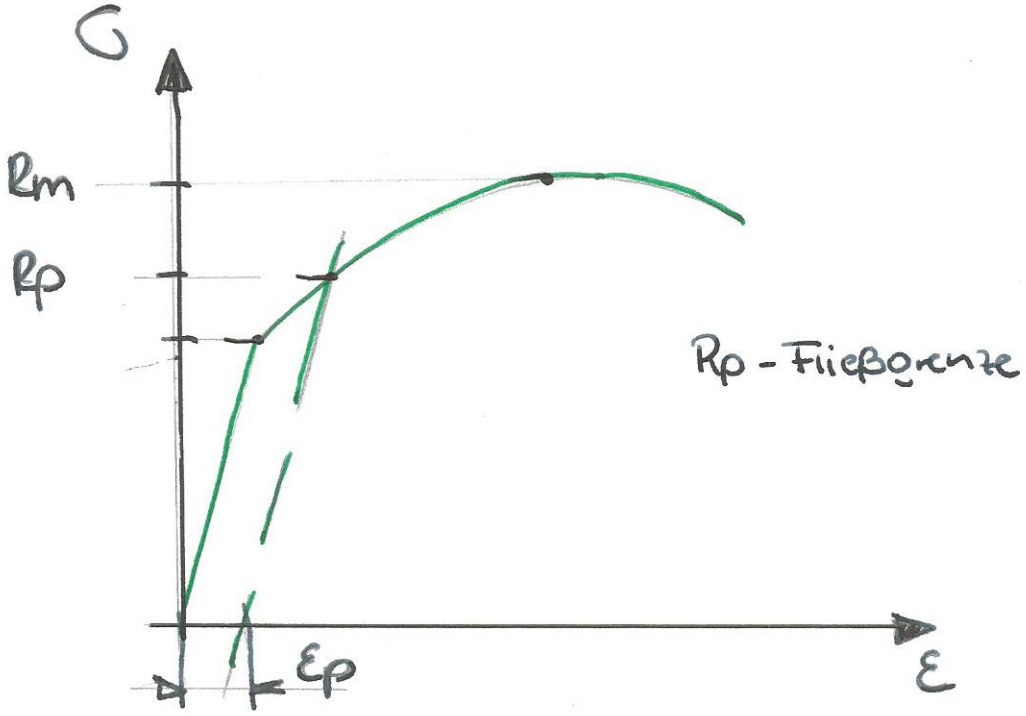
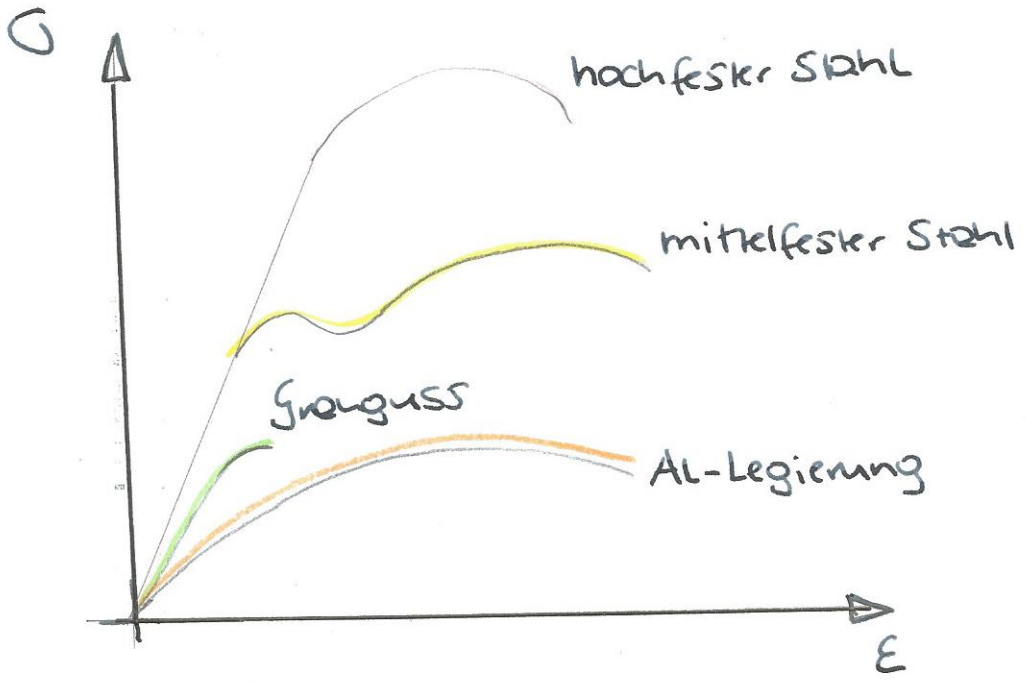
Zugversuch

ISO 6892 (2009)






σ
hochfester Stahl
mittelfester Stahl
Grauguss
Al-Legierung
ε

$$S_B = \frac{R_m}{\sigma}$$

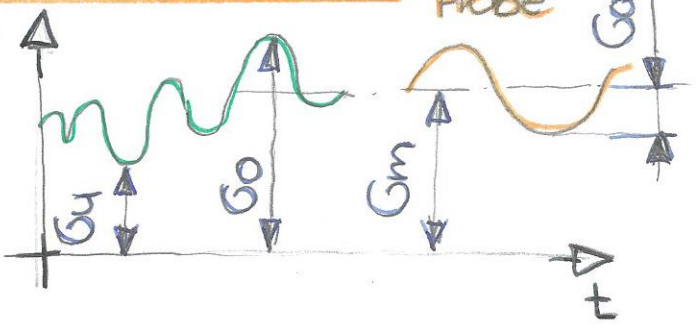
$S_B = 2 \ldots 4$

Sicherheit gegen Bruch

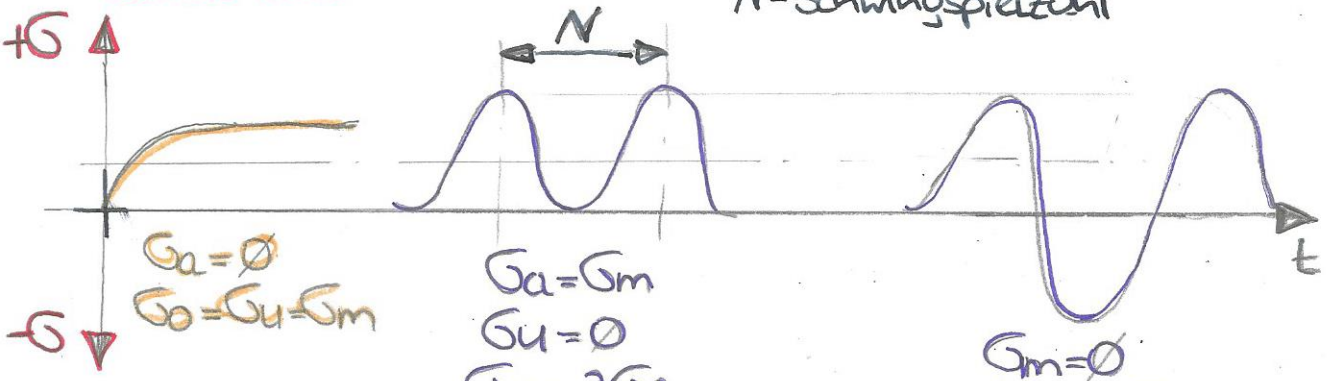
Lastfälle F; $M = f(t)$

1. Maschinen- u. Gerätebau

Bsp.:



Sonderfälle nach BACH



$\sigma_a = \emptyset$
$\sigma_o = \sigma_u = \sigma_m$

ruhend (I)

$\sigma_a = \sigma_m$
$\sigma_u = \emptyset$
$\sigma_o = 2\sigma_a$

schwellend (II)

$\sigma_m = \emptyset$
$\pm\sigma_a = \sigma_w$
$|\sigma_w| = |\sigma_o| = |\sigma_u|$

wechselnd (III)

Ruhegrad: $R = \sigma_m / \sigma_o$

Spannungsverhältnis: $\chi = \sigma_u / \sigma_o$

Stahl: $\sigma_{dF} \approx R_e$

$\sigma_{bF} \approx 1{,}2\, R_e$ ▨

$\approx 1{,}4\, R_e$ ◎

$\tau_{tF} \approx 0{,}6 \ldots 0{,}7\, R_e$

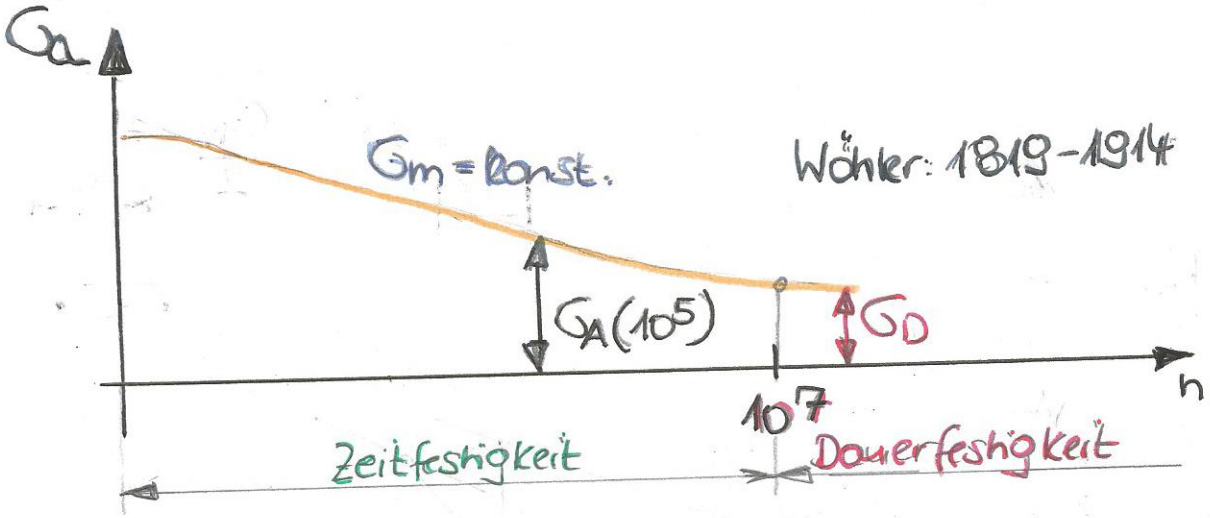
Bach; Carl Julius (1847–1931) Dt. Ing.

GG: $\sigma_{dB} \approx 4 \cdot R_m$

$\sigma_{bB} \approx 1{,}2 \cdot R_m$

$\sigma_{bB} \approx 1{,}4 \cdot R_m$

Dynamische (schwingende) Beanspruchung



$$S_D = \frac{\sigma_D}{\sigma}$$

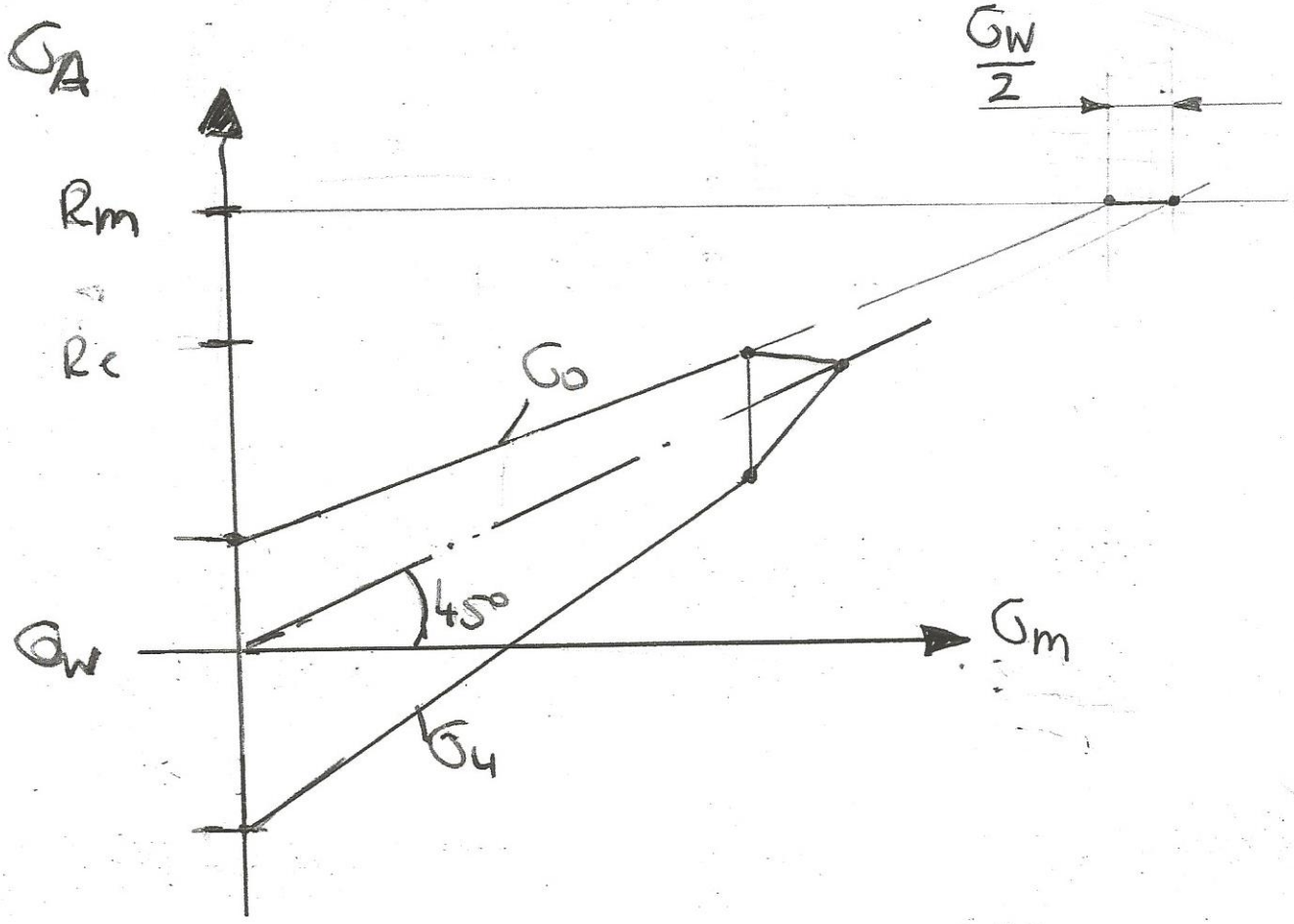
2. Stahlbau DIN 18800 Lastfall H; HZ

Kranbau DIN 15018 Lastfall H; HZ; S

DIN 18800

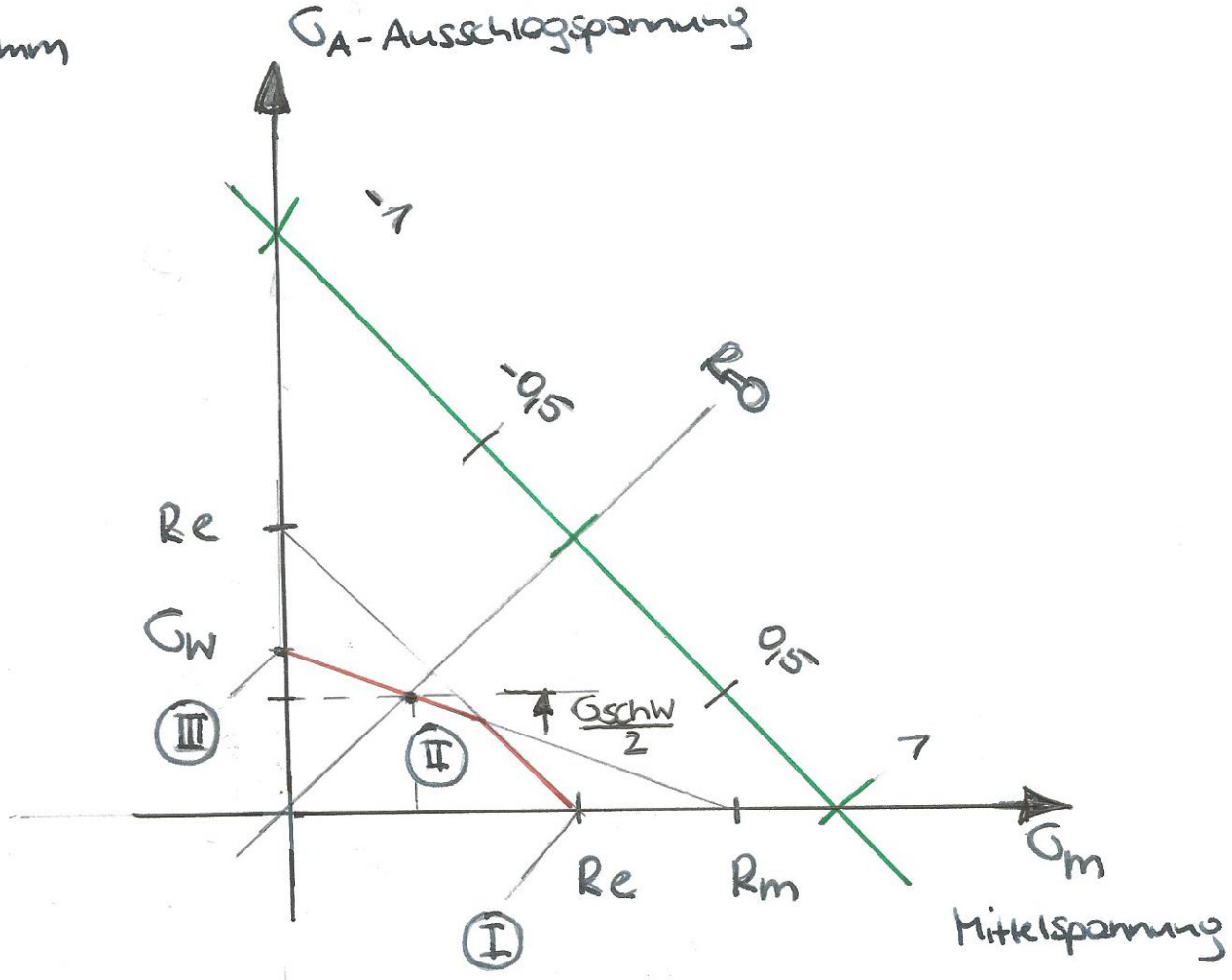
Werkstoff		St 37		St 52	
Lastfall		H	HZ	H	HZ
Druck u. Biegedruck Stab-nachweis DIN 4114; DIN 18800	σ_{dzul}	140	160	210	240
Zug u. Biegezug Druck u. Biegedruck Vergleichsspannung	σ_{zul}	160	180	240	270
Schub	τ_{zul}	92	104	139	156

DFS (Smith)



18.03.2016

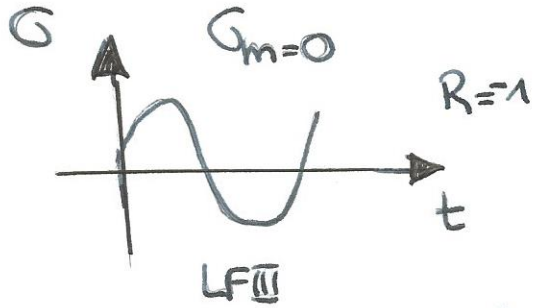
Haigh-Diagramm

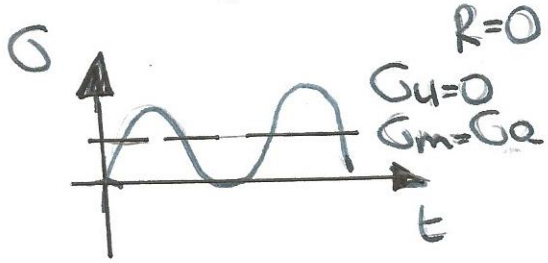


I; II; III - Lastfälle

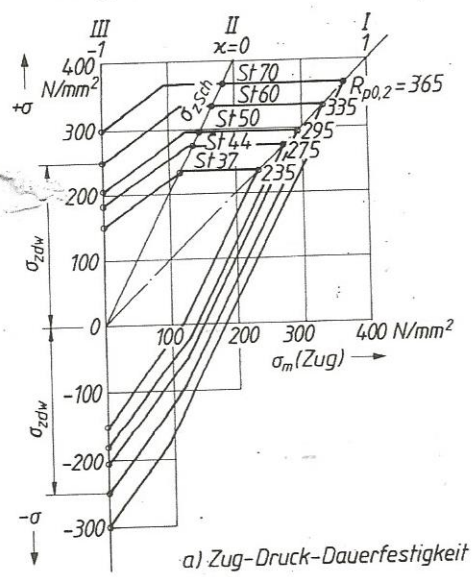
R - Ruhegrad = $\frac{\sigma_u}{\sigma_o}$

σ_W - Wechselspannung
Wechselfestigkeit

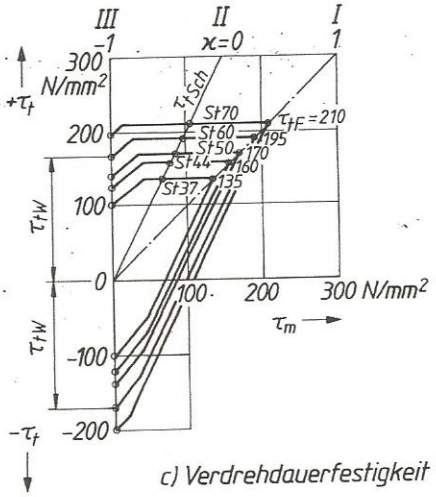




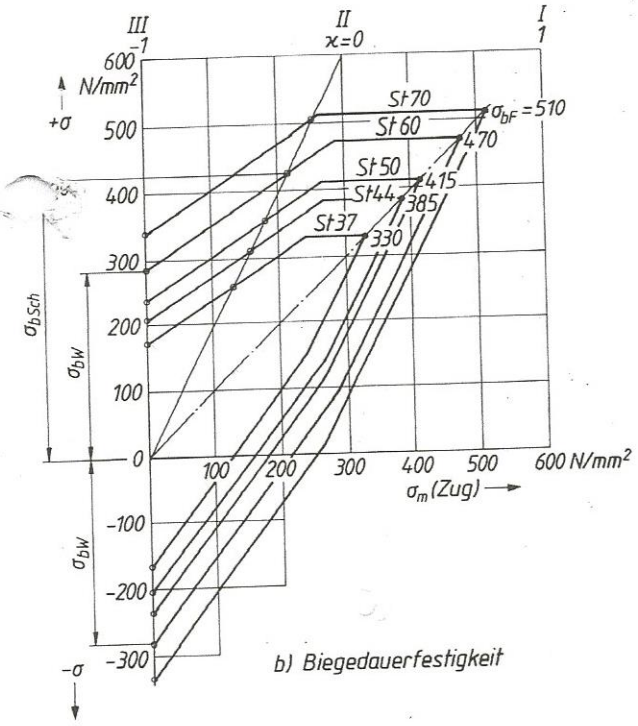
Dauerfestigkeitsschaubilder der *Baustähle*
nach DIN EN 10 025 (DIN 17 100)
Werte gerechnet nach Gl. (3.10a)



a) Zug-Druck-Dauerfestigkeit



c) Verdrehdauerfestigkeit



b) Biegedauerfestigkeit