

Ad Soyad: No:

Not: Bu kağıt sınav kağıtlarının son kağıdı olacaktır. Kağıdın çıktısını sınavdan önce alıp arka yüzüne istediğiniz bilgileri yazmak serbesttir! Sınava gelirken herkes bu kağıdı getirmek zorundadır. Diğer türlü tablolar ve formüller olmadan çözersiniz! Formüllerin kenarlarındaki boşluklara istediğiniz bilgileri yazabilirsiniz. Gerekli Tablo değerleri soru içinde verilecektir!

Vize Öncesinden kalan gerekli olabilecek bazı formüller

$\sigma_{\zeta} = \frac{F}{A}$	$\tau_k = \frac{F}{A}$	$M_b = 9550 \frac{P}{n}$	$\omega = \frac{2 \pi n}{60}$	$\sigma_e = \frac{M_e}{W_e} = \frac{M_e}{I_x/c}$	$\tau_b = \frac{M_b}{W_b} = \frac{M_b}{I_b/r}$	$d = \sqrt[3]{\frac{16 M_b}{\pi \tau_{em}}}$
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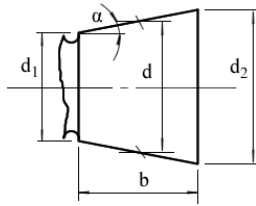
Düz Pres (6. Notlar)

Çap Farkı: $\Delta = d_{mil} - d_{delik} = d + \Delta_1 - (d - \Delta_2) = \Delta_1 + \Delta_2$ $\Delta_{min} = (d_{mil})_{min} - (d_{delik})_{maks}$ $\Delta_{maks} = (d_{mil})_{maks} - (d_{delik})_{min}$

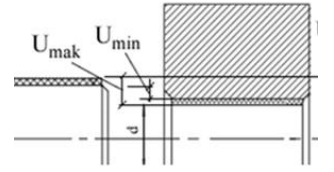
$\delta = 2 (0,6 R_{tm} + 0,6 R_{td})$	$F_{\zeta ak} = \mu \cdot P \cdot \pi \cdot d \cdot b$	$\Delta d = d \cdot \lambda \cdot \Delta t$	$M_s = k \cdot M_d$
$F_{sök} = F_{\zeta ak} = k \cdot F_{mak}$	$U_{min} = \Delta_{min} + \delta_{ez}$	$P_{min} = \frac{2 \cdot M_s}{\pi \cdot \mu \cdot b \cdot d^2}$	$M_s = 1/2 \pi \cdot \mu \cdot P \cdot b \cdot d^2$
$F_{sök} = \mu \cdot P \cdot \pi \cdot d \cdot b$	$U_{mak} = \Delta_{mak} + \delta_{ez}$	$P_{max} = \tau_{em} (1 - C_2^2)$	

$C_1 = \frac{r_i}{r_d}$ $C_2 = \frac{R_i}{R_d}$ $\tau_{mak} = \frac{P_{mak}}{1 - C_2^2} \leq \tau_{em} = \frac{\sigma_{em}}{2}$ $\Delta = \Delta_1 + \Delta_2 = P \cdot d \left[\frac{1}{E_1} \left(\frac{1 + C_1^2}{1 - C_1^2} - \vartheta_1 \right) + \frac{1}{E_2} \left(\frac{1 + C_2^2}{1 - C_2^2} + \vartheta_2 \right) \right]$

Konik Pres (7. Notlar)



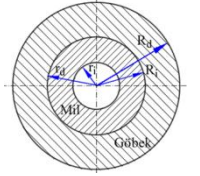
$Tan \alpha = \frac{d_2 - d_1}{2b}$	$d = \frac{d_2 + d_1}{2}$	$A = \frac{\pi \cdot d \cdot b}{Cos \alpha}$	$M_s = k \cdot M_d$
$M_s = \frac{\pi \cdot \mu \cdot P \cdot b \cdot d^2}{2 \cdot Cos \alpha}$	$F_{\zeta ak} = \pi \cdot P \cdot d \cdot b (Tan \alpha + \mu)$	$F_{sök} = \pi \cdot P \cdot d \cdot b (Tan \alpha - \mu)$	



Sıkma Pres (7. notlar)

$M_s = \mu \cdot F_N \cdot d$	$M_s = \mu \cdot P \cdot b \cdot d^2$
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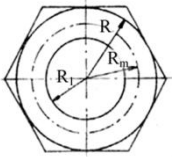
k=1,25 (Titreşimsiz yada az titreşimli bağlantılar)
k=1,5 (Orta titreşimli bağlantılar)
k=2,0 (Titreşimli ve darbeli bağlantılar)



Vida Hesapları-1 (9. Notlar)

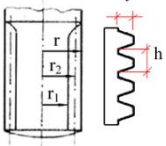
$Tan \alpha = \frac{h}{\pi d_2}$	$\mu = Tan \gamma$	$\mu' = \mu / Cos(\frac{\beta}{2})$	$\mu' = Tan \gamma'$	$F_H = F_0 Tan(\alpha + \gamma)$	$F_H = F_0 Tan(\alpha - \gamma)$
$M_d = F_H \cdot r_2$	$d_2 = d - t$	$F_H = F_0 Tan(\alpha + \gamma')$	$F_H = F_0 Tan(\alpha - \gamma')$	$\gamma' = ArcTan(\mu')$	

$M_{Anahtar} = M_{dişler} + M_{sorum_alti}$	$F_A \cdot r_A = [F_0 Tan(\alpha + \gamma)] \cdot r_2 + [\mu \cdot F_0] \cdot R_m$	$M_{dişler} = F_H \cdot r_2$
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$M = F_0 [r_2 \cdot Tan(\alpha + \gamma) + \mu \cdot R_m]$	$M = F_0 [r_2 \cdot Tan(\alpha + \gamma') + \mu \cdot R_m]$
$M = F_0 [r_2 \cdot Tan(\alpha - \gamma) - \mu \cdot R_m]$	$M = F_0 [r_2 \cdot Tan(\alpha - \gamma') - \mu \cdot R_m]$

$R_m = \sqrt{\frac{R_1^2 + R_2^2}{2}}$	$\eta = \frac{Tan \alpha}{Tan(\alpha + \gamma')}$	$Tan \alpha < Tan \gamma$	$Tan \alpha < Tan \gamma'$
		$\alpha < \gamma$	$\alpha < \gamma'$



$\sigma = \frac{F}{A_1} \leq \sigma_{em}$	$\sigma = \frac{F_0}{A_1} = \frac{F_0}{\frac{\pi d_1^2}{4}}$	$\tau = \frac{M_b}{W_b} = \frac{F_0 \cdot Tan(\alpha + \gamma') \cdot r_2}{\frac{\pi d_1^3}{16}}$
$\sigma_{em} = 0,6 \cdot \sigma_{Ak}$		

$\sigma_{e\zeta} = \sqrt{\sigma^2 + 3 \tau^2} \leq \sigma_{em}$	$P = \frac{F}{z \cdot \pi d_2 \cdot t} \leq P_{em}$	$z = \frac{F}{P_{em} \cdot \pi d_2 \cdot t}$	$m = z \cdot h$
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$\sigma_e = \frac{3 \cdot F \cdot t}{z \cdot \pi d_1 \cdot h^2} \leq \sigma_{em}$	$\tau = \frac{F}{z \cdot \pi d_1 \cdot h} \leq \tau_{em}$
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Vida Hesapları-2 (İşletme yükü var)(10.notlar)

$F_{mak} = F_0 + F_z$	$F_z = \left(\frac{C_1}{C_1 + C_2} \right) F_{i\zeta}$	$C_1 = \frac{C_v C_s}{C_v + C_s}$	$C_v = \frac{A_1 \cdot E_1}{l_v}$	$C_s = \frac{A \cdot E_1}{l_s}$	$C_2 = \frac{A_2 \cdot E_2}{l_2}$
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$A_2 = \frac{\pi D^2}{4} - \frac{\pi d^2}{4}$	$D = e + k (l_2/2)$	$k=0,2$ (Çelik)	$k=0,25$ (DD)	$\sigma_{mak} = \frac{F_{mak}}{A_1} \leq \sigma_{em}$	$\sigma_{em} = 0,6 \cdot \sigma_A \frac{F_{i\zeta}}{F_{mak}}$
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$\sigma_g = \frac{F_g}{A_1} = \frac{F_z/2}{A_1} \leq \sigma_{g_em} \cong 0,7 \cdot \sigma_D$
