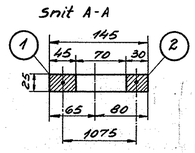
Beregning af bremsetøj.



Faste hængere

$F = 2,5\cdot3 + 2,5\cdot4,5 = 7,5 + 11,2 =$ 18,7 cm²

$x = \frac{7,5\cdot1,5 + 11,2\cdot12,25}{18,7} = 8\,cm =$ 80 mm

$J_x = \frac{2,5}{3}(8^3 + 5^3 + 6,5^3 + 2^3) =$ 545 cm⁴

$W_{x1} = \frac{545}{6,5} =$ 83,8 cm³ $\quad W_{x2} = \frac{545}{8} =$ 68,1 cm³

Sekundært: $F' = 11,2\,cm^2 \quad W_{x1}' = \frac{1}{6}\cdot2,5\cdot4,5^2 =$ 8,42 cm³

Primær bøjning: $\frac{1}{2}\cdot1900\cdot54,8 =$ 52000 kg cm

Sekundær bøjning: $\frac{1}{2}\cdot\frac{1}{2}\cdot6765 =$ 986 kg cm

Træk: $\frac{1}{2}(1350 + 110) =$ 734 kg

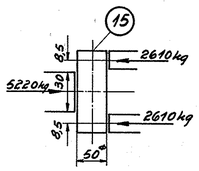
$\sigma_1 = \frac{52000}{83,8} + \frac{986}{8,42} + \frac{734}{18,7} = 620 + 117 + 39 =$ 776 kg/cm²

$\sigma_2 = \div\frac{52000}{68,1} + \frac{734}{18,7} = \div 763 + 39 =$ ÷ 724 kg/cm²

$\tau_1 = \frac{3070}{10,75\cdot2,5\cdot4,5} = 25\,kg/cm^2 \quad \sigma_i\,max = \sigma_{i1} \sim$ 776 kg/cm²

Vridning max: $4865\frac{82}{156}\cdot(8,2 \div 7) =$ 3070 kg cm

Fladetryk på bøsning 4: $p = \frac{1}{2}\frac{6765}{6\cdot2,5} =$ 226 kg/cm²

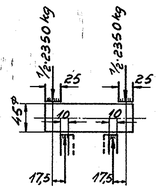


Moment på bolt i 15: $2610\cdot0,85 + \frac{1}{8}\cdot5220\cdot3 =$ 4180 kg cm

$W_{15} =$ 12,27 cm³ $\quad \sigma_{15} = \frac{4180}{12,27} =$ 340 kg/cm²

Moment på bolt 9: $1665\cdot0,85 + \frac{1}{8}\cdot3330\cdot3 = 2665$ kg cm

$W_9 =$ 3,22 cm³ $\quad \sigma_9 = \frac{2665}{3,22} =$ 828 kg/cm²



Bolt for fast hænger $W = 8,95\,cm^3$

$M_{max} = \frac{1}{2}\cdot2350\cdot1,75 =$ 2060 kg cm $\quad \sigma = \frac{2060}{8,95} =$ 230 kg/cm²

Underliggende trækstænger m. ters'er. 305L-22.123I pos3.

P = 4865 kg regnes virkende i tyngdepunkterne for højre og venstre del af gevindet, ca 7mm fra centrum

$R_1 = 4865\frac{82,5}{157} \sim$ 2560 kg $\quad R_2 = 4865\frac{74,5}{157} \sim$ 2305 kg

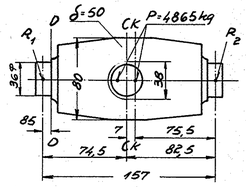
$M_xK = M_x\,max = 2305\cdot7,55 =$ 17400 kg cm

$W_xK > \frac{1}{6}(8 \div 3,8)\cdot5^2 =$ 17,5 cm³

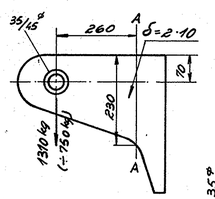
$\sigma_K < \frac{17400}{17,5} =$ 994 kg/cm² st. 42, $I = \frac{42}{37}\cdot1000 =$ 1135 kg/cm²

$M_xD = 2560\cdot0,85 =$ 2180 kg cm $\quad W_D =$ 4,58 cm³

$\sigma_D = \frac{2180}{4,58} =$ 476 kg/cm²



Konsol for hængestang 1a. 305L - 22.137 pos.6

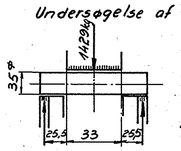


Max træk ~ 1310 + 1,4·85 = 1429 kg

$M_xA \sim 1429\cdot26 =$ 37100 kg cm

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot23^2 = 176\,cm^3 \quad \sigma_A = \frac{37100}{176} =$ 211 kg/cm²

Undersøgelse af øjet unødvendigt, sml. konsol for fast hænger 1b.

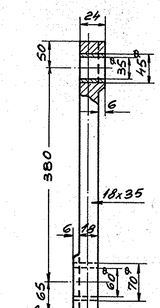


Moment på bolten:

$M = \frac{1}{2}\cdot1429\cdot2,55 + \frac{1}{8}\cdot1429\cdot3,3 =$ 2412 kg cm

$W_{bolt} = 4,22\,cm^3 \quad \sigma = \frac{2412}{4,22} =$ 572 kg/cm²

Fladetryk på 10mm bøsning: $p = \frac{1429}{2\cdot3,5\cdot1} =$ 204 kg/cm²



Hængestang 305L - 22.127, pos.2. Ved aksel 2 og 3

$F = 1,8\cdot3,5 = 6,3\,cm^2 \quad J_{min} = \frac{1}{12}\cdot3,5\cdot1,8^3 = 1,60\,cm^4 \quad \varphi = \frac{6,3^2}{1,69} =$ 235

Max. træk (305L-1.480-02): 1310 + 1,4·84 = 1429 kg

Max. tryk (– –): 750 ÷ 84 = 666 kg

$\sigma_{træk} = \frac{1429}{6,3} =$ 227 kg/cm²

$F_o = \frac{666}{800} = 0,83\,cm^2 \quad V3\cdot23,5\cdot0,38^2 = 1,13\,cm^2$

Bæreevne $P_E' = \frac{2,2\cdot1,69}{0,38^2}\cdot\frac{1000}{3700} =$ 6,96 > 666 kg

kraften er regnet virkende midt i skaftet (ingen excentricitet), fladetrykket i bøsningerne fordeles derfor på: 1,8x3,5 og 1,8·6 cm²

$P_{max} = \frac{1429}{1,8\cdot3,5} =$ 227 kg/cm²

Øverste øje $\quad M_xA = 715\cdot11 + \frac{1}{8}\cdot1429\cdot4,5 = 787 + 803 =$ 1590 kg cm

$W_xA = \frac{1}{6}\cdot2,4\cdot2,75^2 = 3,01 \quad \sigma = \frac{1590}{3,01} =$ 529 kg/cm²

Nederste øje $\quad M_xB = 715\cdot1,25 + \frac{1}{8}\cdot1429\cdot7 = 894 + 1250 =$ 2144 kg cm

$W_xB = \frac{1}{6}\cdot2,4\cdot3^2 = 3,6cm^3; \sigma = \frac{2144}{3,6} =$ 597 kg/cm².

Hængestang v. aksel 1 (pos1)

$F = 2,5\cdot3 =$ 7,5 cm² > 6,3 cm² $\quad J_{min} = \frac{1}{12}\cdot3\cdot2,5^3 = 3,9\,cm^4 \quad \varphi = \frac{7,5^2}{3,9} = 14,4$

$F_o = 0,83\,cm^2; \frac{1}{3}\cdot14,4\cdot0,38^2 = 0,69\,cm^2$

$F_{nødv.} = 0,83 + 0,692 = 1,52\,cm^2 < 7,5\,cm^2$

Konsol for hængestang 1a. 305L - 22.137 pos.6

Max træk ~ 1310 + 1,4·85 = 1429 kg

$M_xA \sim 1429\cdot26 =$ 37100 kg cm

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot23^2 = 176\,cm^3 \quad \sigma_A = \frac{37100}{176} =$ 211 kg/cm²

Undersøgelse af øjet unødvendigt, sml. konsol for fast hænger 1b.

Moment på bolten:

$M = \frac{1}{2}\cdot1429\cdot2,55 + \frac{1}{8}\cdot1429\cdot3,3 =$ 2412 kg cm

$W_{bolt} = 4,22\,cm^3 \quad \sigma = \frac{2412}{4,22} =$ 572 kg/cm²

Fladetryk på 10mm bøsning: $p = \frac{1429}{2\cdot3,5\cdot1} =$ 204 kg/cm²

305L - 22.123 I pos.2.

$R_3 = 4865\frac{106}{204} =$ 2530 kg $\quad R_4 = 4865\frac{98}{204} =$ 2335 kg

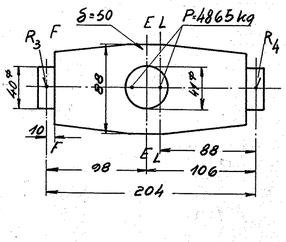
$M_xL = 2335\cdot8,8 =$ 20550 kg cm

$W_xL > \frac{1}{6}(8,8 \div 4,1)\cdot5^2 =$ 19,6 cm³

$\sigma_L < \frac{20550}{19,6} =$ 1050 kg/cm² $\quad I = \frac{42}{37}\cdot1000 =$ 1135 kg/cm²

$M_xF = 2530\cdot1 = 2530$ kg cm $\quad W_F =$ 6,28 cm³

$\sigma_F = \frac{2530}{6,28} =$ 403 kg/cm²



Trækstang 305L - 22.123, pos.9.

$F = 5\cdot1,2 = 6\,cm^2 \quad \sigma = \frac{R_3}{F} = \frac{2530}{6} =$ 422 kg/cm²

Snit G-G: $F = (8-5,5)\cdot2 = 5\,cm^2$

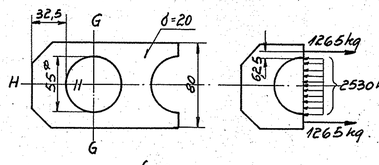
$\sigma = \frac{2530}{5} =$ 506 kg/cm²

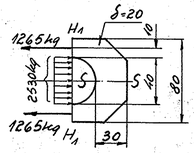
Snit H-H: $W_xH = \frac{1}{6}\cdot2\cdot3,25^2 = 3,52\,cm^3$

$M_xH = 1265\cdot0,625 + \frac{1}{8}\cdot2530\cdot5,5 =$ 2530 kg cm

$\sigma_H = \frac{2530}{3,52} =$ 720 kg/cm²

$\sigma_G = \frac{1265}{2\cdot1,25} =$ 506 kg/cm²





I modsatte ende, snit S-S:

$M_xS = 1265\cdot1 + \frac{1}{8}\cdot2530\cdot4 =$ 2530 kg cm

$W_xS = \frac{1}{6}\cdot2\cdot3^2 = 3\,cm^3$

$\sigma_S = \frac{2530}{3} =$ 843 kg/cm² $\quad \sigma_{H_1} = \frac{1265}{2\cdot2} =$ 316 kg/cm²

I svejsningen: $\sigma = \frac{2530}{6} =$ 422 kg/cm² < 0,8·1000 kg/cm²

Kerneareal af skrue, 1¼" gev: 5,77 cm² $\quad \sigma = \div\frac{4865}{5,77} = \div$ 844 kg/cm²

Konsol for faste hænger 1b. 305L-22.137, pos.1. Kræfter ifl.g. 305L-1.480-02.

Største moment for H = 1100 kg V = 720 ÷ 84 = 636 kg

$M_xA = 1100\cdot7,5 + 636\cdot11 = 8250 + 7000 =$ 15250 kg cm

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot13,5^2 = 61\,cm^3 \quad \sigma_A = \frac{15250}{61} =$ 250 kg/cm²

P_{max} (305L-1480-01) = 2350 kg. På 10mm bøsning: $p \sim \frac{2350^*)}{2\cdot4,5} =$ 261 kg/cm²

Ugunstigste kraft for snit C_1-C_1 er 1320*) kg, som regnes i snittets retning. Beregning med konjugeret bjælke:

Areal af momentkurve F_1: $\frac{1}{8}\frac{1}{2}\cdot1320\cdot3,5\cdot3,5 =$ 2700

— — — F_2: $\frac{1}{2}\cdot5,5X_o\cdot5,5 =$ 15,15·Xa

Udbøjning i C_1, d.v.s. moment på konj. bjælke:

$2700\cdot4,45 \div 15,15Xa\cdot3,67 = 15,15Xa\cdot3,67$

$X_o = \frac{2700\cdot4,45}{2\cdot15,15\cdot3,67} =$ 108 kg

$M_xC_1II = 108\cdot5,5 \div \frac{1}{2}\cdot1320\cdot3,5 = 595 \div 2310 =$ ÷ 1715 kg cm

Snit C_1-C_1. $\quad \frac{1}{2}F = 1\cdot2,7 + 0,8\cdot1,5 = 2,7 + 1,2 =$ 3,9 cm²

$x = \frac{27\cdot1,35 + 1,2\cdot0,75}{3,9} = 0,935 + 0,231\,cm \sim$ 11,7 mm

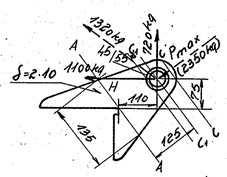
$\frac{1}{2}J_x = \frac{1}{3}\cdot(1,53^3 + 1,17^3) + \frac{0,8}{3}(1,17^3 + 0,33^3)$

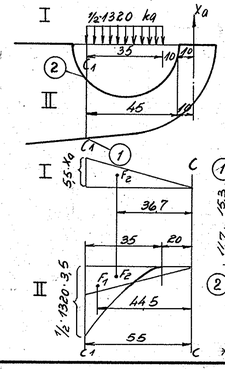
$= 1,73 + 0,44 =$ 2,17 cm⁴

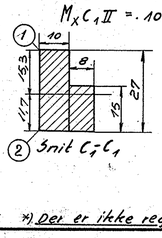
$\frac{1}{2}W_x\,min = \frac{2,17}{1,53} =$ 1,42 cm³

$\sigma_{C_1} = \frac{1715}{2\cdot1,42} =$ ÷ 604 kg/cm²

*) Der er ikke regnet med egenvægtens bidrag.







Konsol for hængestang 1a. 305L - 22.137 pos.6

Max træk ~ 1310 + 1,4·85 = 1429 kg

$M_xA \sim 1429\cdot26 =$ 37100 kg cm

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot23^2 = 176\,cm^3 \quad \sigma_A = \frac{37100}{176} =$ 211 kg/cm²

Undersøgelse af øjet unødvendigt, sml. konsol for fast hænger 1b.

Moment på bolten:

$M = \frac{1}{2}\cdot1429\cdot2,55 + \frac{1}{8}\cdot1429\cdot3,3 =$ 2412 kg cm

$W_{bolt} = 4,22\,cm^3 \quad \sigma = \frac{2412}{4,22} =$ 572 kg/cm²

Fladetryk på 10mm bøsning: $p = \frac{1429}{2\cdot3,5\cdot1} =$ 204 kg/cm²

Hængestang 305L - 22.127, pos.2. Ved aksel 2 og 3

$F = 1,8\cdot3,5 = 6,3\,cm^2 \quad J_{min} = \frac{1}{12}\cdot3,5\cdot1,8^3 = 1,60\,cm^4 \quad \varphi = \frac{6,3^2}{1,69} =$ 235

Max. træk (305L-1.480-02): 1310 + 1,4·84 = 1429 kg

Max. tryk (– –): 750 ÷ 84 = 666 kg

$\sigma_{træk} = \frac{1429}{6,3} =$ 227 kg/cm²

$F_o = \frac{666}{800} = 0,83\,cm^2 \quad V3\cdot23,5\cdot0,38^2 = 1,13\,cm^2$

Bæreevne $P_E' = \frac{2,2\cdot1,69}{0,38^2}\cdot\frac{1000}{3700} =$ 6,96 > 666 kg

kraften er regnet virkende midt i skaftet (ingen excentricitet), fladetrykket i bøsningerne fordeles derfor på: 1,8x3,5 og 1,8·6 cm²

$P_{max} = \frac{1429}{1,8\cdot3,5} =$ 227 kg/cm²

Øverste øje $\quad M_xA = 715\cdot11 + \frac{1}{8}\cdot1429\cdot4,5 = 787 + 803 =$ 1590 kg cm

$W_xA = \frac{1}{6}\cdot2,4\cdot2,75^2 = 3,01 \quad \sigma = \frac{1590}{3,01} =$ 529 kg/cm²

Nederste øje $\quad M_xB = 715\cdot1,25 + \frac{1}{8}\cdot1429\cdot7 = 894 + 1250 =$ 2144 kg cm

$W_xB = \frac{1}{6}\cdot2,4\cdot3^2 = 3,6cm^3; \sigma = \frac{2144}{3,6} =$ 597 kg/cm².

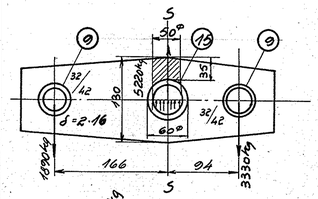
Hængestang v. aksel 1 (pos1)

$F = 2,5\cdot3 =$ 7,5 cm² > 6,3 cm² $\quad J_{min} = \frac{1}{12}\cdot3\cdot2,5^3 = 3,9\,cm^4 \quad \varphi = \frac{7,5^2}{3,9} = 14,4$

$F_o = 0,83\,cm^2; \frac{1}{3}\cdot14,4\cdot0,38^2 = 0,69\,cm^2$

$F_{nødv.} = 0,83 + 0,692 = 1,52\,cm^2 < 7,5\,cm^2$

Udligningsarm A-B 305L-22.128, pos1.



Snit S-S. $\quad F = 2\cdot2\cdot3,5\cdot1,6 =$ 22,4 cm²

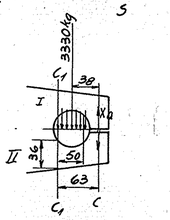
$J_{prim} = 2\cdot\frac{1}{12}\cdot1,6\cdot13^3 \div 2\cdot\frac{1}{12}\cdot1,6\cdot6^3 =$ 528,4 cm⁴

$W_{prim} = \frac{528,4}{6,5} =$ 81,4 cm³ $\quad W_{sek} = \frac{1}{6}\cdot2\cdot1,6\cdot3,5^2 =$ 6,54 m³

$M_{prim} = 1890\cdot16,6 =$ 31400 kg cm

$M_{sek.(indspænding)} = \frac{1}{24}\cdot5220\cdot5 =$ 1088 kg cm

$\sigma_S = \frac{31400}{81,4} + \frac{1088}{6,54} \quad 386 + 166 =$ 552 kg/cm²



Udvendige øje med 3330 kg beregnes som ved hængerne

Areal af momentkurve: $F_1 = \frac{1}{3}\cdot5\cdot\frac{1}{2}\cdot3330\cdot5 =$ 13900

$F_2 = \frac{1}{2}\cdot6,3\cdot X_o\cdot6,3 =$ 19,8 Xa

Udbøjning i C, d.v.s. moment på konj. bjælke:

$13900\cdot4,8 \div 198\cdot X_o\cdot4,2 = 10,8\cdot X_o\cdot4,2$

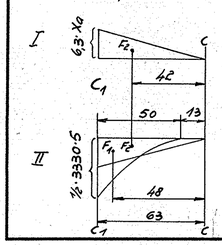
$X_o = \frac{13900\cdot4,8}{2\cdot19,8\cdot4,2} =$ 400 kg

$M_xC_1II = 400\cdot6,3 \div \frac{1}{2}\cdot3330\cdot5 = 2520 \div 8320 =$ ÷ 5800 kg cm

$W_xC_1II = 2\cdot\frac{1}{6}\cdot1,6\cdot3,6^2 = 6,9\,cm^3 \quad \sigma_{C_1II} = \frac{5800}{6,9} =$ 840 kg/cm²

Fladetryk på bolt i 9: $\frac{3330}{3,2\cdot3} =$ 347 kg/cm²

— " — — — " 15: $\frac{5220}{5\cdot3} =$ 348 kg/cm²



Konsol for hængestang 1a. 305L - 22.137 pos.6

Max træk ~ 1310 + 1,4·85 = 1429 kg

$M_xA \sim 1429\cdot26 =$ 37100 kg cm

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot23^2 = 176\,cm^3 \quad \sigma_A = \frac{37100}{176} =$ 211 kg/cm²

Undersøgelse af øjet unødvendigt, sml. konsol for fast hænger 1b.

Moment på bolten:

$M = \frac{1}{2}\cdot1429\cdot2,55 + \frac{1}{8}\cdot1429\cdot3,3 =$ 2412 kg cm

$W_{bolt} = 4,22\,cm^3 \quad \sigma = \frac{2412}{4,22} =$ 572 kg/cm²

Fladetryk på 10mm bøsning: $p = \frac{1429}{2\cdot3,5\cdot1} =$ 204 kg/cm²

Hængestang 305L - 22.127, pos.2. Ved aksel 2 og 3

$F = 1,8\cdot3,5 = 6,3\,cm^2 \quad J_{min} = \frac{1}{12}\cdot3,5\cdot1,8^3 = 1,60\,cm^4 \quad \varphi = \frac{6,3^2}{1,69} =$ 235

Max. træk (305L-1.480-02): 1310 + 1,4·84 = 1429 kg

Max. tryk (– –): 750 ÷ 84 = 666 kg

$\sigma_{træk} = \frac{1429}{6,3} =$ 227 kg/cm²

$F_o = \frac{666}{800} = 0,83\,cm^2 \quad V3\cdot23,5\cdot0,38^2 = 1,13\,cm^2$

Bæreevne $P_E' = \frac{2,2\cdot1,69}{0,38^2}\cdot\frac{1000}{3700} =$ 6,96 > 666 kg

kraften er regnet virkende midt i skaftet (ingen excentricitet), fladetrykket i bøsningerne fordeles derfor på: 1,8x3,5 og 1,8·6 cm²

$P_{max} = \frac{1429}{1,8\cdot3,5} =$ 227 kg/cm²

Øverste øje $\quad M_xA = 715\cdot11 + \frac{1}{8}\cdot1429\cdot4,5 = 787 + 803 =$ 1590 kg cm

$W_xA = \frac{1}{6}\cdot2,4\cdot2,75^2 = 3,01 \quad \sigma = \frac{1590}{3,01} =$ 529 kg/cm²

Nederste øje $\quad M_xB = 715\cdot1,25 + \frac{1}{8}\cdot1429\cdot7 = 894 + 1250 =$ 2144 kg cm

$W_xB = \frac{1}{6}\cdot2,4\cdot3^2 = 3,6cm^3; \sigma = \frac{2144}{3,6} =$ 597 kg/cm².

Hængestang v. aksel 1 (pos1)

$F = 2,5\cdot3 =$ 7,5 cm² > 6,3 cm² $\quad J_{min} = \frac{1}{12}\cdot3\cdot2,5^3 = 3,9\,cm^4 \quad \varphi = \frac{7,5^2}{3,9} = 14,4$

$F_o = 0,83\,cm^2; \frac{1}{3}\cdot14,4\cdot0,38^2 = 0,69\,cm^2$

$F_{nødv.} = 0,83 + 0,692 = 1,52\,cm^2 < 7,5\,cm^2$

Udligningsarm A-B 305L-22.128, pos1.

Snit S-S. $\quad F = 2\cdot2\cdot3,5\cdot1,6 =$ 22,4 cm²

$J_{prim} = 2\cdot\frac{1}{12}\cdot1,6\cdot13^3 \div 2\cdot\frac{1}{12}\cdot1,6\cdot6^3 =$ 528,4 cm⁴

$W_{prim} = \frac{528,4}{6,5} =$ 81,4 cm³ $\quad W_{sek} = \frac{1}{6}\cdot2\cdot1,6\cdot3,5^2 =$ 6,54 m³

$M_{prim} = 1890\cdot16,6 =$ 31400 kg cm

$M_{sek.(indspænding)} = \frac{1}{24}\cdot5220\cdot5 =$ 1088 kg cm

$\sigma_S = \frac{31400}{81,4} + \frac{1088}{6,54} \quad 386 + 166 =$ 552 kg/cm²

Udvendige øje med 3330 kg beregnes som ved hængerne

Areal af momentkurve: $F_1 = \frac{1}{3}\cdot5\cdot\frac{1}{2}\cdot3330\cdot5 =$ 13900

$F_2 = \frac{1}{2}\cdot6,3\cdot X_o\cdot6,3 =$ 19,8 Xa

Udbøjning i C, d.v.s. moment på konj. bjælke:

$13900\cdot4,8 \div 198\cdot X_o\cdot4,2 = 10,8\cdot X_o\cdot4,2$

$X_o = \frac{13900\cdot4,8}{2\cdot19,8\cdot4,2} =$ 400 kg

$M_xC_1II = 400\cdot6,3 \div \frac{1}{2}\cdot3330\cdot5 = 2520 \div 8320 =$ ÷ 5800 kg cm

$W_xC_1II = 2\cdot\frac{1}{6}\cdot1,6\cdot3,6^2 = 6,9\,cm^3 \quad \sigma_{C_1II} = \frac{5800}{6,9} =$ 840 kg/cm²

Fladetryk på bolt i 9: $\frac{3330}{3,2\cdot3} =$ 347 kg/cm²

— " — — — " 15: $\frac{5220}{5\cdot3} =$ 348 kg/cm²

Konsol for hængere 2b og 3b 305L-22.137 pos. 3 og 4

Kræfter ifl.g. diagrammer.

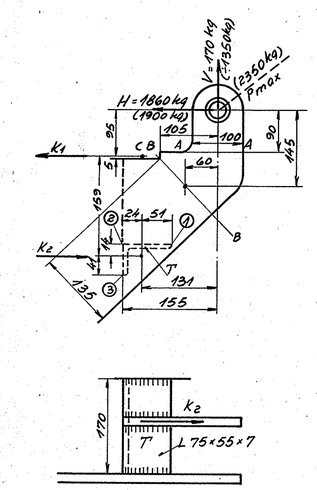
$M_xA = 1900\cdot9 =$ 17100 kg cm Tryk: $1350 + 1,4\cdot85 =$ 1469 kg

$W_xA = 2\cdot\frac{1}{6}\cdot1\cdot10^2 = 33,3\,cm^3. \quad \sigma = \frac{17100}{33,3} \div \frac{1469}{2\times10} \div$ 587 kg/cm²

$M_{max}B = 1860\cdot14,5 + (170 \div 85)\cdot6$

$= 27000 + 510 =$ 27510 kg cm

$W_B = 2\cdot\frac{1}{6}\cdot1\cdot13,5^2 = 60,8\,cm^2. \quad \sigma_B = \frac{27510}{60,8} =$ 453 kg/cm²



Ribben T' undersøges for de to tilfælde:

a) H = 1860 kg, V = 170 kg b) H = 1900 kg, V = ÷1350 kg.

Moment om C erstattes af kræfterne K_1 og K_2

a) $M_C = 1860\cdot9,5 + (170 \div 85)\cdot13,1 \sim$ 18810 kg cm

$K_2 = \frac{18810}{15,9} =$ 1182 kg

K_2 regnes (forenklet) virkende midt på ribben T.

$M_y\,T_{max} \sim \frac{1}{4}\cdot1182\cdot17 =$ 5020 kg cm (Træk 1)

$M_x\,T_{max} \sim \frac{1}{4}\cdot\frac{1}{2}(170 \div 85)\cdot17 =$ ÷ 181 kg cm

$\sigma_1 = \frac{181\cdot14}{21,8} + \frac{5020}{9,39} = 12 + 535 =$ 547 kg/cm²

$\sigma_2 = \frac{181\cdot14}{21,8} \div \frac{5020\cdot24}{47,9} = 12 \div 251 =$ ÷ 239 kg/cm²

$\sigma_3 = \div\frac{181}{5,32} \div \frac{5020\cdot24}{47,9} = \div 34 \div 251 =$ ÷ 285 kg/cm²

b) $M_C = 1900\cdot9,5 \div (1350 + 85\cdot1,4)\cdot13,1 =$ ÷ 1200 kg cm

$K_2 = \div\frac{1200}{15,9} =$ ÷ 76 kg

$M_y\,T_{max} \sim \div 14\cdot76\cdot17 =$ ÷ 323 kg cm

$M_x\,T_{max} \sim \frac{1}{4}\cdot\frac{1}{2}\cdot(1350 + 85\cdot1,4)\cdot17 =$ 3120 kg cm (Træk 1)

$\sigma_1 = \div\frac{3120\cdot14}{21,8} \div \frac{323}{9,39} = \div 200 \div 34 =$ ÷ 234 kg/cm²

$\sigma_2 = \div\frac{3120\cdot14}{21,8} + \frac{323\cdot24}{47,9} = \div 200 + 16 =$ ÷ 186 kg/cm²

$\sigma_3 = \frac{3120}{5,32} + \frac{323\cdot24}{47,9} = 587 + 16 =$ 603 kg/cm²

Undersøgelse af øje for H = 1900 kg, se 305L-1.480-05

Stk.	Betegnelse	Pos.	Materiale kvalitet	Model nr. eller materiale størrelse	rå / færdig Vægt/stk.
		5			
		4			
		3			
		2			
		1			

Tegn. E.H. 26.4.55	Rev.	Afd.	Målestok:
Kalk. 7.5.12.5.55	Norm.	Dato	
Dato	Rettelse	Indeks	

FRICHS

Anvendelse	Stykliste nr.
1500 hk diesel-el. lokomotiv.	
Tegningens benævnelse	**Tegningens nummer**
Bremseberegning.	305L-1.480-04.

Indeks:

FRICHS nr. 147