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Design of Valve Spring Formulas

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List of 47 Design of Valve Spring Formulas

Design of Valve Spring

Diameter of Spring Wire

1) Diameter of Wire of Engine Valve Spring

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

$$\text{fx } d_{\text{wire}} = \sqrt{\frac{8 \cdot K \cdot ((P_i + k \cdot h_{\text{max}}) \cdot C)}{\pi \cdot f_s}}$$

$$\text{ex } 4.22442\text{mm} = \sqrt{\frac{8 \cdot 1.2 \cdot ((120\text{N} + 9\text{N/mm} \cdot 11\text{mm}) \cdot 8)}{\pi \cdot 300\text{N/mm}^2}}$$

2) Diameter of Wire of Engine Valve Spring given Maximum Compression in Spring

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

$$\text{fx } d_{\text{wire}} = \left(\frac{8 \cdot P \cdot N \cdot D^3}{G \cdot x} \right)^{\frac{1}{4}}$$

$$\text{ex } 5.512036\text{mm} = \left(\frac{8 \cdot 340\text{N} \cdot 12 \cdot (46\text{mm})^3}{98900\text{N/mm}^2 \cdot 34.8\text{mm}} \right)^{\frac{1}{4}}$$



3) Diameter of Wire of Engine Valve Spring given Mean Coil Diameter

$$\text{fx } d_{\text{wire}} = \frac{D}{8}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 5.75\text{mm} = \frac{46\text{mm}}{8}$$

4) Diameter of Wire of Engine Valve Spring given Number of Active Turns of Spring

$$\text{fx } d_{\text{wire}} = \left(\frac{8 \cdot D^3 \cdot k \cdot N}{G} \right)^{0.25}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 5.400049\text{mm} = \left(\frac{8 \cdot (46\text{mm})^3 \cdot 9\text{N/mm} \cdot 12}{98900\text{N/mm}^2} \right)^{0.25}$$

5) Diameter of Wire of Engine Valve Spring given Torsional Shear Stress in Wire

$$\text{fx } d_{\text{wire}} = \sqrt{\frac{8 \cdot K \cdot P \cdot C}{\pi \cdot f_s}}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 5.26362\text{mm} = \sqrt{\frac{8 \cdot 1.2 \cdot 340\text{N} \cdot 8}{\pi \cdot 300\text{N/mm}^2}}$$



6) Diameter of Wire of Engine Valve Spring given Total Turns of Spring

$$\text{fx } d_{\text{wire}} = \left(\frac{8 \cdot D^3 \cdot (k \cdot (N_t - 2))}{G} \right)^{0.25}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$\text{ex } 5.509197\text{mm} = \left(\frac{8 \cdot (46\text{mm})^3 \cdot (9\text{N/mm} \cdot (15 - 2))}{98900\text{N/mm}^2} \right)^{0.25}$$

7) Spring Index of Engine Valve Spring given Shear Stress, Maximum Force and Wire Diameter

$$\text{fx } C = \frac{\pi \cdot f_s \cdot d_{\text{wire}}^2}{8 \cdot K \cdot P}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$\text{ex } 8.734667 = \frac{\pi \cdot 300\text{N/mm}^2 \cdot (5.5\text{mm})^2}{8 \cdot 1.2 \cdot 340\text{N}}$$

8) Wahl Factor for Engine Valve Spring given Mean Coil Diameter and Wire Diameter

$$\text{fx } K = \frac{\pi \cdot f_s \cdot d_{\text{wire}}^2}{8 \cdot C \cdot P}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$\text{ex } 1.3102 = \frac{\pi \cdot 300\text{N/mm}^2 \cdot (5.5\text{mm})^2}{8 \cdot 8 \cdot 340\text{N}}$$



9) Wahl Factor for Engine Valve Spring given Spring Index

[Open Calculator !\[\]\(bd1a142de767a21e5362c595f844a4ff_img.jpg\)](#)

$$\text{fx } K = \frac{\pi \cdot f_s \cdot d_{\text{wire}}^2}{8 \cdot C \cdot (P_i + k \cdot h_{\text{max}})}$$

$$\text{ex } 2.034101 = \frac{\pi \cdot 300\text{N/mm}^2 \cdot (5.5\text{mm})^2}{8 \cdot 8 \cdot (120\text{N} + 9\text{N/mm} \cdot 11\text{mm})}$$

Frequency of Vibration

10) Mass of Engine Valve Spring given its Natural Frequency of Vibration and Stiffness

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$\text{fx } m = \frac{k}{4 \cdot \omega_n^2}$$

$$\text{ex } 0.161591\text{kg} = \frac{9\text{N/mm}}{4 \cdot (118\text{Hz})^2}$$

11) Natural Frequency of Vibration of Engine Valve Spring given its Mass and Stiffness

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$\text{fx } \omega_n = \frac{\sqrt{\frac{k}{m}}}{2}$$

$$\text{ex } 122.4745\text{Hz} = \frac{\sqrt{\frac{9\text{N/mm}}{0.15\text{kg}}}}{2}$$



12) Stiffness of Engine Valve Spring given its Natural Frequency of Vibration and Mass

$$fx \quad k = 4 \cdot m \cdot \omega_n^2$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

$$ex \quad 8.3544N/mm = 4 \cdot 0.15kg \cdot (118Hz)^2$$

13) Stiffness of Engine Valve Spring given Total Turns of Spring

$$fx \quad k = \frac{G \cdot d_{wire}^4}{8 \cdot N \cdot D^3}$$

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5_img.jpg\)](#)

$$ex \quad 9.68506N/mm = \frac{98900N/mm^2 \cdot (5.5mm)^4}{8 \cdot 12 \cdot (46mm)^3}$$

Length of Spring

14) Free Length of Engine Valve Spring

$$fx \quad L_f = N_t \cdot d_{wire} + 1.15 \cdot x$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$ex \quad 122.52mm = 15 \cdot 5.5mm + 1.15 \cdot 34.8mm$$



15) Solid Length of Engine Valve Spring

[Open Calculator !\[\]\(feabb98897b440bc8695a03336a6e2df_img.jpg\)](#)

$$\text{fx } L = \left(\left(\frac{G \cdot d_{\text{wire}}^4}{8 \cdot D^3 \cdot k} \right) + 2 \right) \cdot d_{\text{wire}}$$

$$\text{ex } 82.02377\text{mm} = \left(\left(\frac{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4}{8 \cdot (46\text{mm})^3 \cdot 9\text{N/mm}} \right) + 2 \right) \cdot 5.5\text{mm}$$

16) Solid Length of Engine Valve Spring given its Free Length and Maximum Compression

[Open Calculator !\[\]\(642aa997563f9a325b310230bb5078b7_img.jpg\)](#)

$$\text{fx } L = L_f - 1.15 \cdot x$$

$$\text{ex } 89.98\text{mm} = 130\text{mm} - 1.15 \cdot 34.8\text{mm}$$

17) Solid Length of Engine Valve Spring given Number of Active Turns of Spring and Wire Diameter

[Open Calculator !\[\]\(51514032c8ca341817228f39f1307b05_img.jpg\)](#)

$$\text{fx } L = (N + 2) \cdot d_{\text{wire}}$$

$$\text{ex } 77\text{mm} = (12 + 2) \cdot 5.5\text{mm}$$

18) Solid Length of Engine Valve Spring given Total Number of Turns of Spring and Wire Diameter

[Open Calculator !\[\]\(f219cfc00b8db0cd1a81ae1fc9afaf28_img.jpg\)](#)

$$\text{fx } L = N_t \cdot d_{\text{wire}}$$

$$\text{ex } 82.5\text{mm} = 15 \cdot 5.5\text{mm}$$



19) Total Gap between Coils of Engine Valve Spring given Maximum Compression of Spring

$$\text{fx } G_A = 0.15 \cdot x$$

[Open Calculator !\[\]\(6605b201d6f14d9b3bcb8ab5f274d107_img.jpg\)](#)

$$\text{ex } 5.22\text{mm} = 0.15 \cdot 34.8\text{mm}$$

Maximum Compression of Spring

20) Maximum Compression of Engine Valve Spring given its Free Length and Solid Length

$$\text{fx } x = \frac{L_f - L}{1.15}$$

[Open Calculator !\[\]\(f95dab70c751fda7d824b8b03650f7aa_img.jpg\)](#)

$$\text{ex } 34.78261\text{mm} = \frac{130\text{mm} - 90\text{mm}}{1.15}$$

21) Maximum Compression of Engine Valve Spring given Number of Active Turns

$$\text{fx } x = \frac{8 \cdot P \cdot N \cdot D^3}{G \cdot d_{\text{wire}}^4}$$

[Open Calculator !\[\]\(e9474ce1d70442456f8fe9c393ea149c_img.jpg\)](#)

$$\text{ex } 35.10562\text{mm} = \frac{8 \cdot 340\text{N} \cdot 12 \cdot (46\text{mm})^3}{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4}$$



22) Maximum Compression of Engine Valve Spring given Total Gap between Coils of Spring

$$\text{fx } x = \frac{G_A}{0.15}$$

[Open Calculator !\[\]\(71ceb62b681518c82e95d615e7265d66_img.jpg\)](#)

$$\text{ex } 34\text{mm} = \frac{5.1\text{mm}}{0.15}$$

23) Maximum Compression of Engine Valve Spring given Total Turns

$$\text{fx } x = \frac{8 \cdot P \cdot (N_t - 2) \cdot D^3}{G \cdot d_{\text{wire}}^4}$$

[Open Calculator !\[\]\(fc3a57079704ef1b99671c8cafae23be_img.jpg\)](#)

$$\text{ex } 38.03108\text{mm} = \frac{8 \cdot 340\text{N} \cdot (15 - 2) \cdot (46\text{mm})^3}{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4}$$

Mean Coil Diameter of Spring

24) Diameter of Coil of Engine Valve Spring given Maximum Compression in Spring

$$\text{fx } D = \left(\frac{G \cdot (d_{\text{wire}}^4) \cdot x}{8 \cdot (P) \cdot (N)} \right)^{\frac{1}{3}}$$

[Open Calculator !\[\]\(d3d0bc9cbc0b5499f7bfafd3278057f7_img.jpg\)](#)

$$\text{ex } 45.86612\text{mm} = \left(\frac{98900\text{N/mm}^2 \cdot ((5.5\text{mm})^4) \cdot 34.8\text{mm}}{8 \cdot (340\text{N}) \cdot (12)} \right)^{\frac{1}{3}}$$



25) Diameter of Coil of Engine Valve Spring given Torsional Shear Stress in Wire

[Open Calculator !\[\]\(6e934896f25e6ce1b0dbb50c23abc197_img.jpg\)](#)

$$\text{fx } D = C \cdot \left(\sqrt{\frac{8 \cdot K \cdot (P \cdot C)}{\pi \cdot f_s}} \right)$$

$$\text{ex } 42.10896\text{mm} = 8 \cdot \left(\sqrt{\frac{8 \cdot 1.2 \cdot (340\text{N} \cdot 8)}{\pi \cdot 300\text{N/mm}^2}} \right)$$

26) Mean Coil Diameter of Engine Valve Spring given Number of Active turns of Spring

[Open Calculator !\[\]\(f80254b170d0ecdc443847276e625120_img.jpg\)](#)

$$\text{fx } D = \left(\frac{G \cdot (d_{\text{wire}}^4)}{8 \cdot (N) \cdot k} \right)^{\frac{1}{3}}$$

$$\text{ex } 47.13872\text{mm} = \left(\frac{98900\text{N/mm}^2 \cdot ((5.5\text{mm})^4)}{8 \cdot (12) \cdot 9\text{N/mm}} \right)^{\frac{1}{3}}$$



27) Mean Coil Diameter of Engine Valve Spring given Total Turns of Spring



$$\text{fx } D = \left(\frac{G \cdot (d_{\text{wire}}^4)}{8 \cdot (((N_t) - 2)) \cdot k} \right)^{\frac{1}{3}}$$

[Open Calculator](#)

$$\text{ex } 45.89764\text{mm} = \left(\frac{98900\text{N/mm}^2 \cdot ((5.5\text{mm})^4)}{8 \cdot (((15) - 2)) \cdot 9\text{N/mm}} \right)^{\frac{1}{3}}$$

28) Mean Coil Diameter of Engine Valve Spring given Wire Diameter



$$\text{fx } D = 8 \cdot d_{\text{wire}}$$

[Open Calculator](#)

$$\text{ex } 44\text{mm} = 8 \cdot 5.5\text{mm}$$

Modulus of Rigidity of Spring Wire



29) Modulus of Rigidity of Engine Valve Spring given Maximum Compression in Spring



$$\text{fx } G = \frac{8 \cdot P \cdot N \cdot D^3}{x \cdot d_{\text{wire}}^4}$$

[Open Calculator](#)

$$\text{ex } 99768.55\text{N/mm}^2 = \frac{8 \cdot 340\text{N} \cdot 12 \cdot (46\text{mm})^3}{34.8\text{mm} \cdot (5.5\text{mm})^4}$$



30) Modulus of Rigidity of Engine Valve Spring given Number of Active Turns of Spring

$$\text{fx } G = \frac{8 \cdot P \cdot (N_t - 2) \cdot D^3}{x \cdot d_{\text{wire}}^4}$$

[Open Calculator !\[\]\(65669ef2a9341eca7c5ba6092e766555_img.jpg\)](#)

$$\text{ex } 108082.6 \text{ N/mm}^2 = \frac{8 \cdot 340 \text{ N} \cdot (15 - 2) \cdot (46 \text{ mm})^3}{34.8 \text{ mm} \cdot (5.5 \text{ mm})^4}$$

31) Modulus of Rigidity of Engine Valve Spring given Total Number of Turns of Spring

$$\text{fx } G = \frac{8 \cdot D^3 \cdot k \cdot (N_t - 2)}{d_{\text{wire}}^4}$$

[Open Calculator !\[\]\(eaac180de418db4eae4b4cefebda75e8_img.jpg\)](#)

$$\text{ex } 99563.14 \text{ N/mm}^2 = \frac{8 \cdot (46 \text{ mm})^3 \cdot 9 \text{ N/mm} \cdot (15 - 2)}{(5.5 \text{ mm})^4}$$

Number of Active Turns

32) Number of Active Turns of Engine Valve Spring

$$\text{fx } N = \frac{G \cdot d_{\text{wire}}^4}{8 \cdot D^3 \cdot k}$$

[Open Calculator !\[\]\(0df0bdc1e09cbc2587d9dd4511cb0c27_img.jpg\)](#)

$$\text{ex } 12.91341 = \frac{98900 \text{ N/mm}^2 \cdot (5.5 \text{ mm})^4}{8 \cdot (46 \text{ mm})^3 \cdot 9 \text{ N/mm}}$$



33) Number of Active Turns of Engine Valve Spring given Maximum Compression in Spring

$$\text{fx } N = \frac{G \cdot d_{\text{wire}}^4 \cdot x}{8 \cdot P \cdot D^3}$$

[Open Calculator !\[\]\(b3131996c2d47980618867ba93d92313_img.jpg\)](#)

$$\text{ex } 11.89553 = \frac{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4 \cdot 34.8\text{mm}}{8 \cdot 340\text{N} \cdot (46\text{mm})^3}$$

34) Number of Active Turns of Engine Valve Spring given Pitch of Spring

$$\text{fx } N = \frac{L_f}{p} - 1$$

[Open Calculator !\[\]\(99af31d6d7b9b738106c66bf7ffde536_img.jpg\)](#)

$$\text{ex } 13.28571 = \frac{130\text{mm}}{9.1\text{mm}} - 1$$

35) Number of Active Turns of Engine Valve Spring given Total Turns

$$\text{fx } N = N_t - 2$$

[Open Calculator !\[\]\(51c8b64a0f70f0b96d4cbd0a65299579_img.jpg\)](#)

$$\text{ex } 13 = 15 - 2$$



Pitch of Coils

36) Pitch of Engine Valve Spring

$$\text{fx } p = \frac{(N + 2) \cdot d_{\text{wire}} + 1.15 \cdot \frac{8 \cdot P \cdot N \cdot D^3}{G \cdot d_{\text{wire}}^4}}{N + 1}$$

[Open Calculator !\[\]\(f024d36410e36011059c73f7d7908105_img.jpg\)](#)

$$\text{ex } 9.028574\text{mm} = \frac{(12 + 2) \cdot 5.5\text{mm} + 1.15 \cdot \frac{8 \cdot 340\text{N} \cdot 12 \cdot (46\text{mm})^3}{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4}}{12 + 1}$$

37) Pitch of Engine Valve Spring given its Free Length and Number of Active Turns

$$\text{fx } p = \frac{L_f}{N + 1}$$

[Open Calculator !\[\]\(1a0ecb0f44016aa353f6ecdd79a3699d_img.jpg\)](#)

$$\text{ex } 10\text{mm} = \frac{130\text{mm}}{12 + 1}$$

38) Pitch of Engine Valve Spring given its Free Length and Total Number of Turns

$$\text{fx } p = \frac{L_f}{N_t - 1}$$

[Open Calculator !\[\]\(528617bae5d4722c747678f5759aceb1_img.jpg\)](#)

$$\text{ex } 9.285714\text{mm} = \frac{130\text{mm}}{15 - 1}$$



Stress Due to Suction Pressure

39) Maximum Force on Engine Valve Spring given Maximum Compression in Spring

$$\text{fx } P = \frac{G \cdot d_{\text{wire}}^4 \cdot x}{8 \cdot N \cdot D^3}$$

[Open Calculator !\[\]\(2c3352433bff267ed8ae00945ed009eb_img.jpg\)](#)

$$\text{ex } 337.0401\text{N} = \frac{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4 \cdot 34.8\text{mm}}{8 \cdot 12 \cdot (46\text{mm})^3}$$

40) Maximum Force on Engine Valve Spring given Torsional Shear Stress in Wire

$$\text{fx } P = \frac{\pi \cdot f_s \cdot d_{\text{wire}}^2}{8 \cdot K \cdot C}$$

[Open Calculator !\[\]\(8706f9f9febc74216a91030d11f10ce7_img.jpg\)](#)

$$\text{ex } 371.2234\text{N} = \frac{\pi \cdot 300\text{N/mm}^2 \cdot (5.5\text{mm})^2}{8 \cdot 1.2 \cdot 8}$$

41) Stiffness of Engine Valve Spring

$$\text{fx } k = \frac{P_2}{h_{\text{max}}}$$

[Open Calculator !\[\]\(e1d91f75f04404f4dc129e6dbe94982e_img.jpg\)](#)

$$\text{ex } 22.72727\text{N/mm} = \frac{250\text{N}}{11\text{mm}}$$



42) Torsional Shear Stress in Wire of Engine Valve Spring

[Open Calculator !\[\]\(1ac7c971e7df5bf204fbb84fd617a50a_img.jpg\)](#)

$$\text{fx } f_s = \left(\frac{8 \cdot K \cdot (P_i + k \cdot h_{\max} \cdot C)}{\pi \cdot d_{\text{wire}}^2} \right)$$

$$\text{ex } 92.12783\text{N/mm}^2 = \left(\frac{8 \cdot 1.2 \cdot (120\text{N} + 9\text{N/mm} \cdot 11\text{mm} \cdot 8)}{\pi \cdot (5.5\text{mm})^2} \right)$$

43) Torsional Shear Stress in Wire of Engine Valve Spring given Maximum Force on Spring

[Open Calculator !\[\]\(b73fbe1f68c0c0158be408bb873fa9d8_img.jpg\)](#)

$$\text{fx } f_s = \frac{8 \cdot K \cdot P \cdot C}{\pi \cdot d_{\text{wire}}^2}$$

$$\text{ex } 274.7672\text{N/mm}^2 = \frac{8 \cdot 1.2 \cdot 340\text{N} \cdot 8}{\pi \cdot (5.5\text{mm})^2}$$

44) Total Force on Engine Valve Spring

[Open Calculator !\[\]\(aaf00827f03a5235835203c37180dc74_img.jpg\)](#)

$$\text{fx } P = P_i + k \cdot h_{\max}$$

$$\text{ex } 219\text{N} = 120\text{N} + 9\text{N/mm} \cdot 11\text{mm}$$



Total Number of Turns

45) Total Number of Turns of Engine Valve Spring given Maximum Compression in Spring

$$\text{fx } N_t = \frac{G \cdot d_{\text{wire}}^4 \cdot x}{8 \cdot P \cdot D^3} + 2$$

[Open Calculator !\[\]\(26388bf82a9d28864e0ddb284e508cab_img.jpg\)](#)

$$\text{ex } 13.89553 = \frac{98900\text{N/mm}^2 \cdot (5.5\text{mm})^4 \cdot 34.8\text{mm}}{8 \cdot 340\text{N} \cdot (46\text{mm})^3} + 2$$

46) Total Number of Turns of Engine Valve Spring given Pitch of Spring

$$\text{fx } N_t = \frac{L_f}{p} + 1$$

[Open Calculator !\[\]\(848edf3a971f9d4a6acd664a9b2a684c_img.jpg\)](#)

$$\text{ex } 15.28571 = \frac{130\text{mm}}{9.1\text{mm}} + 1$$

47) Total Turns of Engine Valve Spring given Number of Active Turns

$$\text{fx } N_t = N + 2$$

[Open Calculator !\[\]\(1e785a35c87067562e5eed96a1b6021d_img.jpg\)](#)

$$\text{ex } 14 = 12 + 2$$



Variables Used

- **C** Spring Index for Valve Spring
- **D** Mean Coil Diameter of Valve Spring (Millimeter)
- **d_{wire}** Wire Diameter of Valve Spring (Millimeter)
- **f_s** Shear Stress in Valve Spring (Newton per Square Millimeter)
- **G** Modulus of Rigidity of Valve Spring (Newton per Square Millimeter)
- **G_A** Total Axial Gap between Valve Spring Coils (Millimeter)
- **h_{max}** Lift of Valve (Millimeter)
- **k** Stiffness of Valve Spring (Newton per Millimeter)
- **K** Wahl Factor of Valve Spring
- **L** Solid Length of Valve Spring (Millimeter)
- **L_f** Free Length of Valve Spring (Millimeter)
- **m** Mass of Valve Spring (Kilogram)
- **N** Active Coils in Valve Spring
- **N_t** Total Coils in Valve Spring
- **p** Pitch of Valve spring (Millimeter)
- **P** Axial Force on Valve Spring (Newton)
- **P₂** Force to Lift Engine Valve (Newton)
- **P_i** Initial Spring Force on Valve (Newton)
- **x** Maximum Compression in Valve Spring (Millimeter)
- **ω_n** Natural Frequency Valve Spring (Hertz)



Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288
Archimedes' constant
- **Function:** **sqrt**, sqrt(Number)
Square root function
- **Measurement:** **Length** in Millimeter (mm)
Length Unit Conversion 
- **Measurement:** **Weight** in Kilogram (kg)
Weight Unit Conversion 
- **Measurement:** **Force** in Newton (N)
Force Unit Conversion 
- **Measurement:** **Frequency** in Hertz (Hz)
Frequency Unit Conversion 
- **Measurement:** **Stiffness Constant** in Newton per Millimeter (N/mm)
Stiffness Constant Unit Conversion 
- **Measurement:** **Stress** in Newton per Square Millimeter (N/mm²)
Stress Unit Conversion 



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