

Stiffness calculated @ 25 Hz

## Application Worksheet

APPLICATION WORKSHEET - INPUTS METRIC		METRIC
<b>PART I: SYSTEM DATA:</b> 1. Total Supported Load (W <sub>T</sub> ): $W_T = 166 \text{ Kg} \times 9,81 = 1628 \text{ N}$ 2. Number of Isolators (n): $n = 3$ 3. Static Load per Isolator (W): $W = \frac{W_T}{n} = \frac{1628 \text{ N}}{3}$ <small>* Assumes a central CG</small> 4. Load Axis: Compression Shear or Roll 45° Compression/Roll		W = 543 N* Load Axis Compression
<b>PART II: VIBRATION SIZING:</b> 1. Input Excitation Frequency: $f_i = 25 \text{ Hz (= rpm)}$ 2. System Response Natural Frequency for 80% isolation: $f_n = \frac{f_i}{3,0} = 8,3 \text{ Hz}$ 3. Maximum Isolator Vibration Stiffness: (K <sub>v</sub> ) $K_v = \frac{W (2\pi f_n)^2}{g} = \frac{543 (2\pi \cdot 8,3)^2}{9,81}$ g = 9,81 m/s <sup>2</sup> 4. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator. a.) Calculated "W" must be less than the isolator's max static load and b.) Isolator's vibration stiffness must be less than the calculated maximum K <sub>v</sub>		K <sub>v</sub> = 1511 N/m
<b>PART III: SHOCK SIZING:</b> 1. Maximum Allowable Transmitted Acceleration: A <sub>T</sub> = _____ G's 2. Shock Input Velocity: V = _____ m/s Free Fall Impact: V = $\sqrt{2gh}$ g = 9,81 m/s <sup>2</sup> h = Drop Height (m) D <sub>min</sub> = $\frac{V^2}{g(A_T)}$ 3. Min. Isolator Response Deflection: K <sub>s</sub> = $\frac{W(V/D_{min})^2}{g}$ 4. Maximum Isolator Shock Stiffness: 5. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator. a.) Calculated "W" must be less than the isolator's max static load and b.) Calculated D <sub>min</sub> must be less than the isolator's max deflection Note: Metric deflections are calculated in meters (m) and technical data is in millimeters (mm). and c.) Isolator's shock stiffness must be less than calculated maximum "K <sub>s</sub> " D <sub>actual</sub> = $\frac{V}{\sqrt{\frac{K_s(\text{Isolator})g}{W}}}$ 6. Check actual deflection using "K <sub>s</sub> " from technical data to ensure that the isolator's max deflection is not exceeded. 7. If isolator's max deflection is exceeded, select another isolator and repeat steps 5 and 6.		D <sub>min</sub> = _____ m K <sub>s</sub> = _____ N/m D <sub>actual</sub> = _____ m

Stiffness Calculated at 35 Hz.

APPLICATION WORKSHEET - INPUTS METRIC		METRIC
<b>PART I: SYSTEM DATA:</b> 1. Total Supported Load (W <sub>T</sub> ): $W_T = 166 \text{ Kg} \times 9,81 = 1628 \text{ N}$ 2. Number of Isolators (n): $n = 3$ 3. Static Load per Isolator (W): $W = \frac{W_T}{n} = \frac{1628 \text{ N}}{3}$ <small>* Assumes a central CG</small> 4. Load Axis: Compression Shear or Roll 45° Compression/Roll		$W = 543 \text{ N}$ Load Axis <u>Compression</u>
<b>PART II: VIBRATION SIZING:</b> 1. Input Excitation Frequency: $f_i = 35 \text{ Hz} (= \text{rpm})$ 2. System Response Natural Frequency for 80% Isolation: $f_n = \frac{f_i}{3,0} = 11,7 \text{ Hz}$ 3. Maximum Isolator Vibration Stiffness: (K <sub>v</sub> ) $K_v = \frac{W (2\pi f_n)^2}{g} = \frac{543 (2 \cdot \pi \cdot 11,7)^2}{9,81}$ $g = 9,81 \text{ m/s}^2$ 4. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator. a.) Calculated "W" must be less than the isolator's max static load and b.) Isolator's vibration stiffness must be less than the calculated maximum K <sub>v</sub>		$K_v = 2975 \text{ N/m}$
<b>PART III: SHOCK SIZING:</b> 1. Maximum Allowable Transmitted Acceleration: $A_T = \text{_____} G's$ 2. Shock Input Velocity: Free Fall Impact: $V = \sqrt{2gh}$ $g = 9,81 \text{ m/s}^2$ $h = \text{Drop Height (m)}$ $D_{min} = \frac{V^2}{g(A_T)}$ 3. Min. Isolator Response Deflection: $K_s = \frac{W(V/D_{min})^2}{g}$ 4. Maximum Isolator Shock Stiffness: 5. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator. a.) Calculated "W" must be less than the isolator's max static load and b.) Calculated D <sub>min</sub> must be less than the isolator's max deflection Note: Metric deflections are calculated in meters (m) and technical data is in millimeters (mm). and c.) Isolator's shock stiffness must be less than calculated maximum "K <sub>s</sub> " $D_{actual} = \frac{V}{\sqrt{\frac{K_s(\text{Isolator})g}{W}}}$ 6. Check actual deflection using "K <sub>s</sub> " from technical data to ensure that the isolator's max deflection is not exceeded. 7. If isolator's max deflection is exceeded, select another isolator and repeat steps 5 and 6.		$D_{min} = \text{_____} \text{ m}$ $K_s = \text{_____} \text{ N/m}$ $D_{actual} = \text{_____} \text{ m}$

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