## Application Worksheet

| APPLICATION WORKSHEET - INPUTS IMPERIAL/METRIC | | IMPERIAL | METRIC |
|---|---|---|---|
| **PART I: SYSTEM DATA:** | | | |
| 1. Total Supported Load ( $W_T$): | $W_T$ = _______ lbs.<br>$W_T$ = _______ Kg x 9.81 = _______ N | | |
| 2. Number of Isolators (n): | n = _______ | | |
| 3. Static Load per Isolator (W):<br>* Assumes a central CG | $W = \frac{W_T}{n}$ | W = _______ lbs.* | W = _______ N* |
| 4. Load Axis: Compression<br>Shear or Roll<br>45° Compression/Roll | | Load Axis<br>_______ | Load Axis<br>_______ |
| **PART II: VIBRATION SIZING:** | | | |
| 1. Input Excitation Frequency | $(f_i)$ = _______ Hz $\left(= \frac{rpm}{60}\right)$ | | |
| 2. System Response Natural Frequency for 80% isolation: | $f_n = \frac{f_i}{3.0}$ = _______Hz | | |
| 3. Maximum Isolator Vibration Stiffness: ($K_v$) | $K_v = \frac{W\,(2\pi\, f_n)^2}{g}$<br>$g$ = 386 in/sec$^2$ or 9.81 m/sec$^2$ | $K_v$ = _______ lbs./in. | $K_v$ = _______ N/m |
| 4. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator.<br>a.) Calculated "W" must be less than the isolator's max static load<br>and<br>b.) Isolator's vibration stiffness must be less than the calculated maximum $K_v$ | | | |
| **PART III: SHOCK SIZING:** | | | |
| 1. Maximum Allowable Transmitted Acceleration: | $A_T$ = _______G's | | |
| 2. Shock Input Velocity:<br><br>Free Fall Impact: | V = _______ in./sec.<br>V = _______ m/sec.<br>$V = \sqrt{2gh}$<br>g = 386 in./sec.$^2$ or 9.81 m/sec.$^2$<br>h = Drop Height (in. or m) | | |
| 3. Min. Isolator Response Deflection: | $D_{min} = \frac{V^2}{g(A_T)}$ | $D_{min}$ = _______in. | $D_{min}$ = _______m |
| 4. Maximum Isolator Shock Stiffness: | $K_s = \frac{W(V/D_{min})^2}{g}$ | $K_s$ = _______lbs./in. | $K_s$ = _______N/m |
| 5. Select an isolator by comparing calculated values with technical data for the desired load axis provided in tables for each isolator.<br>a.) Calculated "W" must be less than the isolator's max static load<br>and<br>b.) Calculated $D_{min}$ must be less than the isolator's max deflection<br>Note: Metric deflections are calculated in meters (m) and technical data is in millimeters (mm).<br>and<br>c.) Isolator's shock stiffness must be less than calculated maximum "$K_s$" | | | |
| 6. Check actual deflection using "$K_s$" from technical data to ensure that the isolator's max deflection is not exceeded. | $D_{actual} = \frac{V}{\sqrt{\frac{K_s(\text{Isolator})g}{W}}}$ | $D_{actual}$ = _______in. | $D_{actual}$ = _______m |
| 7. If isolator's max deflection is exceeded, select another isolator and repeat steps 5 and 6. | | | |