

Sec. 1

ROUND SPRING DESIGN INPUTS

Please Fill Out the Following:

1 (A) Type of wire

- (1) Music wire (ASTM-A228)
- (2) Stainless Steel (ASTM-A313)
- (3) Hard Drawn (ASTM-A227)
- (4) Oil Tempered (ASTM-A229)

4 (B) Type of spring ends

- (1) Plain ends (total coils = active coils)
- (2) Plain and ground ends (total coils = active coils + 1.)
- (3) Squared ends (total coils = active coils + 2.)
- (4) Squared and ground ends (total coils = active coils +

.250 in. (C) Hole diameter (if applicable)

0.4 in. (D) Free length of clearance between hole diameter and OD of spring (if applicable)

.125 in. (E) Pin diameter (if applicable)

0.4 in. (F) Min. free length clearance between pin diameter and ID of spring (if applicable)

6 lb. (G) P1 (lbs. of force at L1)

3.75 in. (H) L1 (maximum length of spring while in part)

8 lb. (I) P2 (lbs. of force at L2)

3.40 in. (J) L2 (minimum length of spring while in part)

65 % (K) Indicate maximum stress as a function of tensile strength

Solid (L) Indicate whether this stress is to be taken at solid stress or at L2 (Static Application only)

in/sec. (M) Activating mass velocity (Dynamic Application only)

(N) Indicate whether or not a drawing is to be made

SPRING ANALYSIS OUTPUT
26 Apr 1984

15:30:39

For:
ROUND MUSIC WIRE WITH SQUARED AND GROUND ENDS

OUTSIDE DIAMETER..... .210+/- .008
WIRE DIAMETER..... .034+/- .0004
HOLE DIAMETER..... .220
PIN DIAMETER..... .125
TOTAL TURNS..... 8.0
ACTIVE TURNS..... 6.0
FREE LENGTH..... .480+/- .015
SOLID HEIGHT..... .272+/- .003
WAHL CORRECTION FACTOR... 1.30
SPRING RATE.....58.73
DIA. CHANGE FL to SH..... .0015
MEAN DIAMETER..... .176
SPRING INDEX..... 5.18

SEAR SPRING

STRESS AND LOAD:
LOAD AT .375in..... 6.166
EXPECTED LOAD VARIATION... 5.55 TO 6.78
STRESS AT .375in..... 91294.1
LOAD AT .340in..... 8.222
EXPECTED LOAD VARIATION... 7.40 TO 9.04
STRESS AT .340in..... 121725.5
FORCE TO SOLID..... 12.22
STATIC STRESS AT SOLID.... 180849.3
TOTAL STRESS AT SOLID.... 180849.3
ENERGY..... .25
TENSILE STRENGTH..... 319820.2
DESIGN STRESS AS 65%..... 207883.1
TOTAL STRESS AS
PERCENT OF TENSILE STRESS. 56.5

SPRING ANALYSIS OUTPUT
26 Apr 1984

15:29:14

For:

ROUND MUSIC WIRE WITH SQUARED AND GROUND ENDS

OUTSIDE DIAMETER..... .210+/- .008
WIRE DIAMETER..... .035+/- .0004
HOLE DIAMETER..... .220
PIN DIAMETER..... .125
TOTAL TURNS..... 8.0
ACTIVE TURNS..... 6.0
FREE LENGTH..... .480+/- .015
SOLID HEIGHT..... .280+/- .003
WAHL CORRECTGION FACTOR... 1.31
SPRING RATE.....67.08
DIA. CHANGE FL to SH..... .0014
MEAN DIAMETER..... .175
SPRING INDEX..... 5.00

STRESS AND LOAD:

LOAD AT .375in..... 7.044
EXPECTED LOAD VARIATION... 6.34 TO 7.75
STRESS AT .375in..... 95943.4
LOAD AT .340in..... 9.392
EXPECTED LOAD VARIATION... 8.45 TO 10.33
STRESS AT .340in..... 127924.5
FORCE TO SOLID..... 13.42
STATIC STRESS AT SOLID.... 182749.3
TOTAL STRESS AT SOLID.... 182749.3
ENERGY..... .29
TENSILE STRENGTH..... 318395.6
DESIGN STRESS AS 65%..... 206957.2
TOTAL STRESS AS
PERCENT OF TENSILE STRESS. 57.4

SPRING ANALYSIS OUTPUT
26 Apr 1984

15:27:27

For:

ROUND MUSIC WIRE WITH SQUARED AND GROUND ENDS

OUTSIDE DIAMETER..... .210+/- .008
WIRE DIAMETER..... .033+/- .0004
HOLE DIAMETER..... .220
PIN DIAMETER..... .125
TOTAL TURNS..... 8.0
ACTIVE TURNS..... 6.0
FREE LENGTH..... .480+/- .015
SOLID HEIGHT..... .264+/- .003
WAHL CORRECTGION FACTOR... 1.29
SPRING RATE..... 51.24
DIA. CHANGE FL to SH..... .0015
MEAN DIAMETER..... .177
SPRING INDEX..... 5.36

STRESS AND LOAD:

LOAD AT .375in..... 5.388
EXPECTED LOAD VARIATION... 4.84 TO 5.92
STRESS AT .375in..... 86811.1
LOAD AT .340in..... 7.173
EXPECTED LOAD VARIATION... 6.46 TO 7.89
STRESS AT .340in..... 115748.2
FORCE TO SOLID..... 11.07
STATIC STRESS AT SOLID.... 178582.9
TOTAL STRESS AT SOLID.... 178582.9
ENERGY..... .22
TENSILE STRENGTH..... 321293.9
DESIGN STRESS AS 65%..... 208841.0
TOTAL STRESS AS
PERCENT OF TENSILE STRESS. 55.6