Spring Design 101

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What information is needed to properly design/order a spring?

1) What parameters do I Have?

- What does my spring fit into?
- What does my spring fit over?
- What is the atmosphere? (Moisture, Saltwater, Heat etc.)
- How is the spring being used/installed?
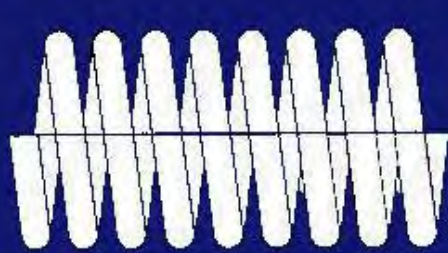- Has there ever been a problem before?

What information is needed to properly design/order a spring?

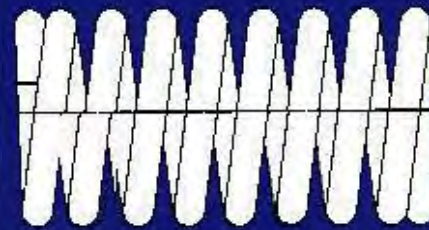2) What are the spring's physical requirements?

- What are the relaxed/installed lengths?
- How much travel is involved?
- What length are you traveling to? (Length/Deflection)
- What is the max solid/travel height?
- What force is needed at a specified length?
- What type of material is needed?
- What are the end types needed?
- Tight Tolerances Needed?
- Type of winding?
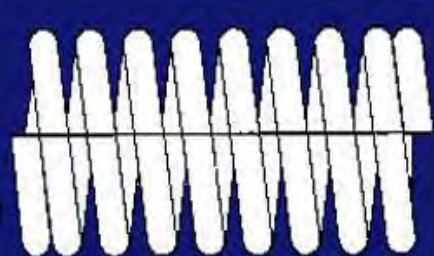
Compression Springs
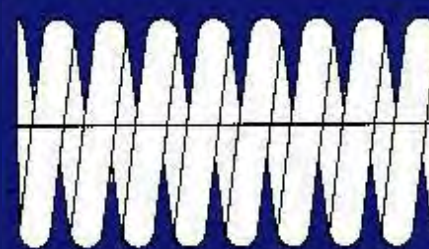
1) Type of ends?

Open Ends Not Ground

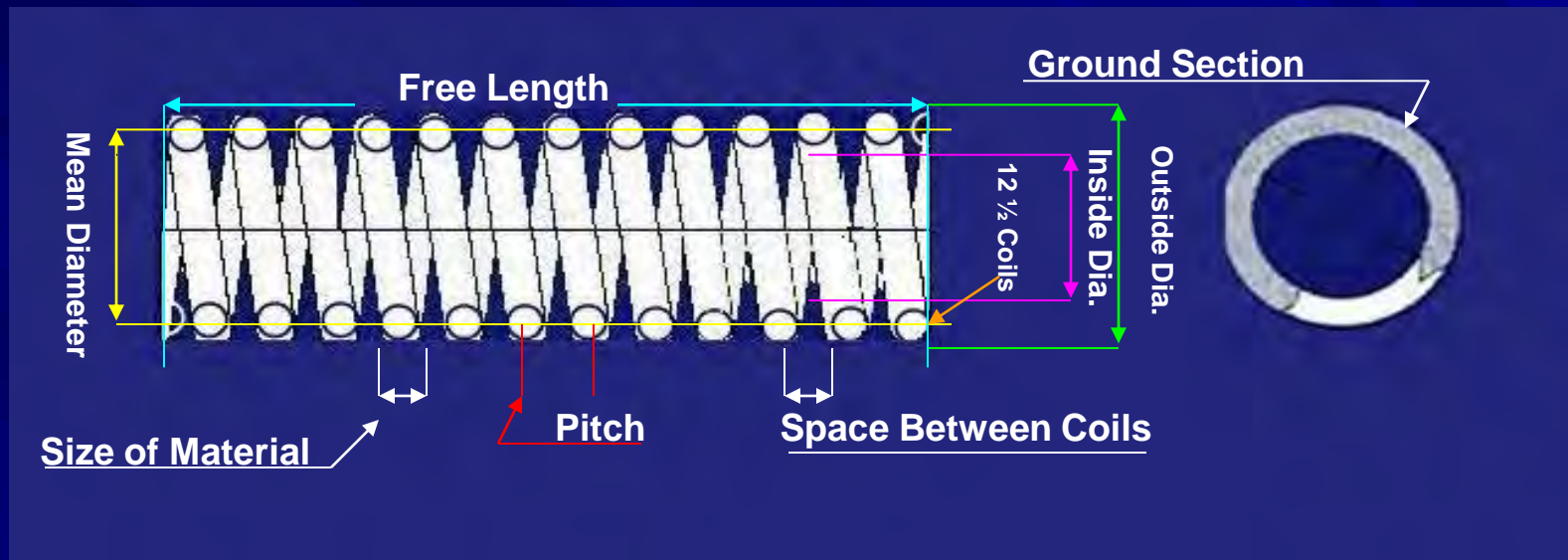Closed, Squared & Ground Ends

Closed Ends Not Ground

Open Ends Ground Square

Compression Springs

2)What are my Physical Characteristics?

- Size/Type of Material?
- Outside Diameter?
- Inside Diameter?
- Free Length?
- Total Coils?
- Solid Height?
- Rate per Inch?
- Load @ Length?
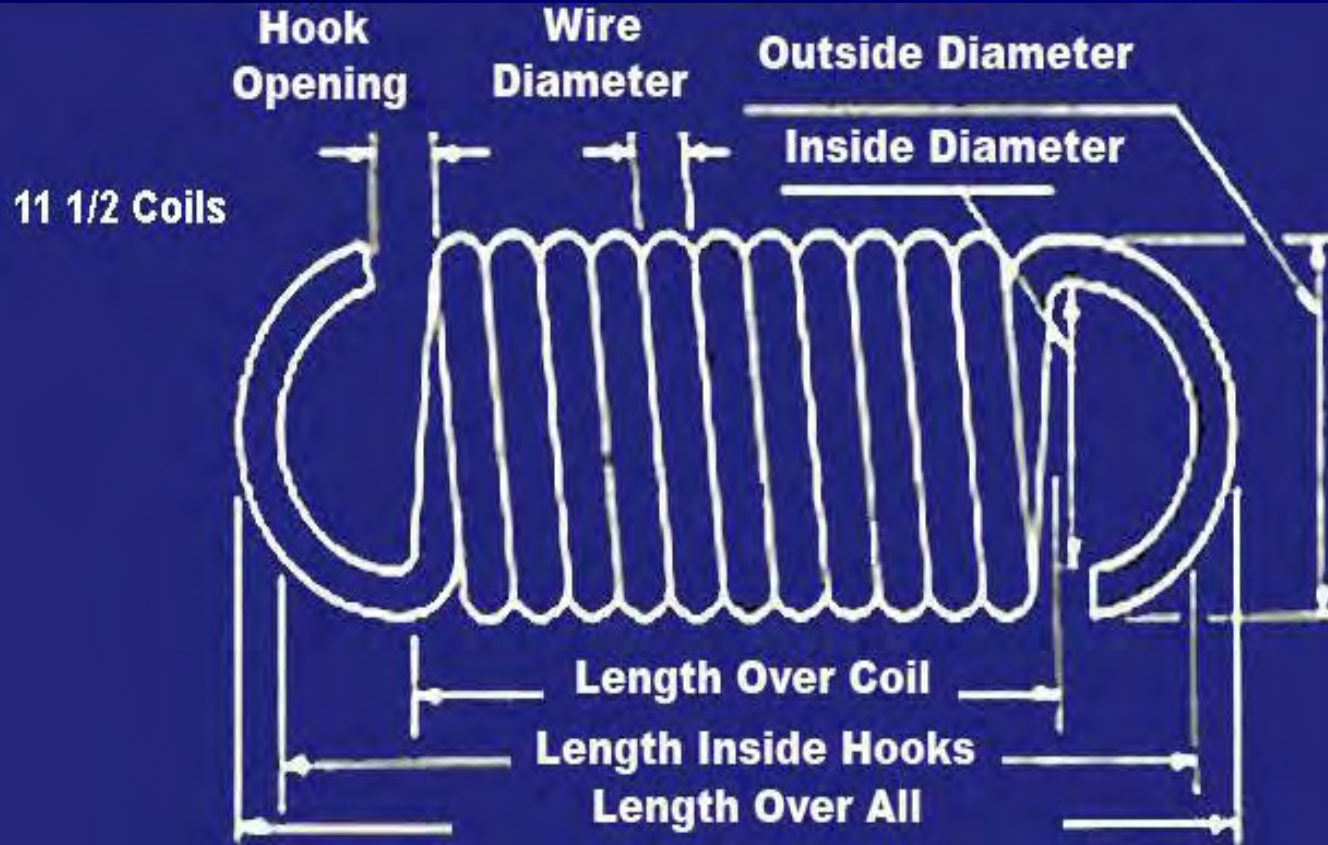
Compression Springs

Extension Springs

2)What are my Physical Characteristics?

- Size/Type of Material?
- Outside Diameter?
- Inside Diameter?
- Free Length Body/Inside Hooks?
- Total Coils?
- Initial Tension?
- Rate per Inch?
- Load @ Length?
- Max Deflection?
- Gap Lengths of hooks?
- Straight Pull?

Extension Springs

Extension Springs

Machine Half Hook over Center

Hand Half Loop over Center

Double Twisted Full-Loop over Center

Full Loop at Side

Small Eye at Side

Small Eye at Center

Small Off-set Hook at Side

Plain Square Cut Ends

One End Ground Flat

Extension Springs

Loop Round End Hook over Center

Long Square Ends Hook over Center

V-Hook over Center

Extended Eye from either Center of Side

Straight End Annealed to allow Forming

Coned End to Hold Long Swivel Eye

Coned End with Short Swivel Eye

Coned End with Swivel Hook

Coned End with Swivel Bolt

Extension Springs

Machine Loop and Machine Hook Shown in Line

Machine Loop and Machine Hook Shown at Right Angles

Hand Loop and Hook at Right Angles

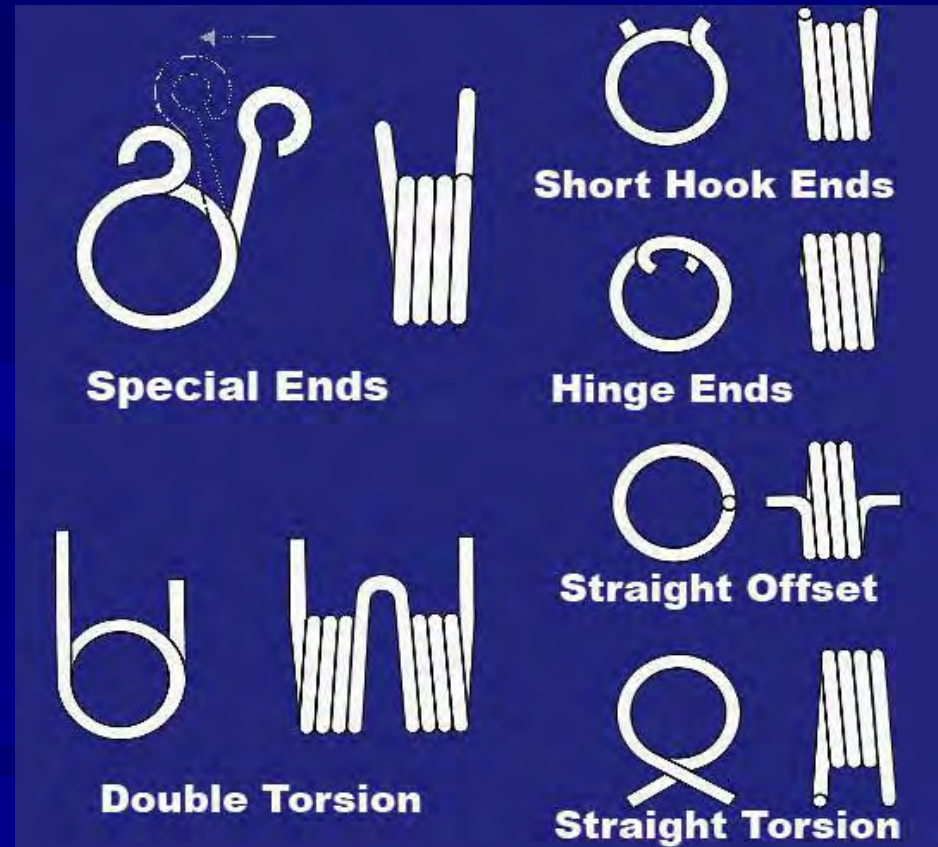Full Loop on Side and Small Eye from Center

Torsion Springs

2)What are my Physical Characteristics?

- Size/Type of Material?
- Outside Diameter?
- Inside Diameter?
- Body Length?
- Total Coils?
- Angle at free position?
- Degrees of deflection?
- Rate Inch/lbs. Per Degree?
- Max degrees of Deflection?
- Closewound or Pitched?

Torsion Springs

1)Type of Ends?

Conclusion

1) Always offer as much information as possible!

2) Remember, price is not always everything!

3) Remember, lead times!

Spring Specification Sheet