



Firestone Industrial Products

Commercial Vehicle Spring Design Parameter Sheet

Customer Company Name:

Project Title:

Firestone Contact:

Customer Contact Name:

Application:

Revision Level:

Email:

Phone:

Fax Number:

Annual Volume:

Document Start Date:

Current Date:

- ***"Parameter sheet" required for each suspension configuration in which the airspring will be used.***
- ***Please provide chassis/suspension drawings at ride height & extremes of travel and mounting surface drawings.***
- ***FSIP engineers should be consulted for air spring applications prior to customer fixing mounting hard points.***

Is a Prototype Required:

a) Date Required:

b) Quantity Required:

PPAP Required:

a) PPAP Target Date:

b) PPAP Level Required:

c) Please Attach Any Special PPAP Requirements

Date Required:

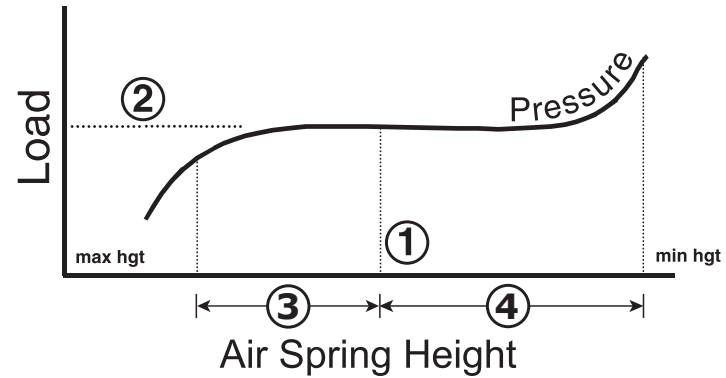
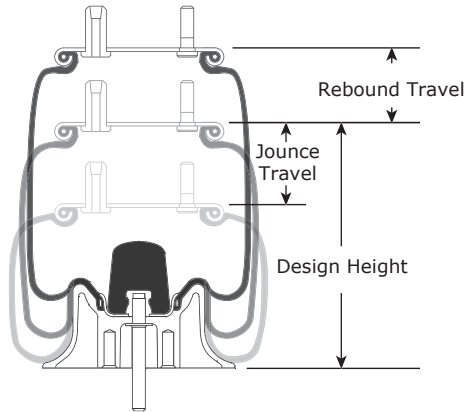
Quantity Required:

Packaging Requirements:

FSIP relies upon the Customer to provide the information necessary to develop an air spring that meets the Customer's needs and specifications. The information requested herein does not include all of the necessary items about design, repair or service. All information requested herein by FSIP is requested solely for the benefit of FSIP to permit it to analyze the Customer's request for an air spring application. By requesting information, FSIP is not assuming any duty to design the suspension system of which the spring is a component part. FSIP does not warrant or make any representations regarding the use or the results of the use of the information or materials generated during the design phase in terms of their correctness, accuracy, reliability, or otherwise, and information generated during the design phase may contain technical inaccuracies or typographical errors. FSIP's general terms and conditions apply to any products or results received by customer.

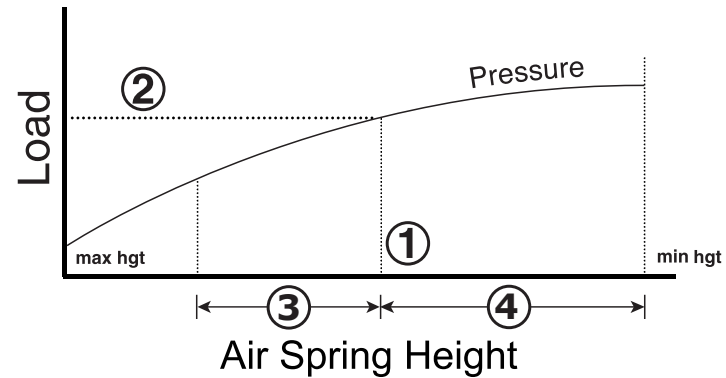
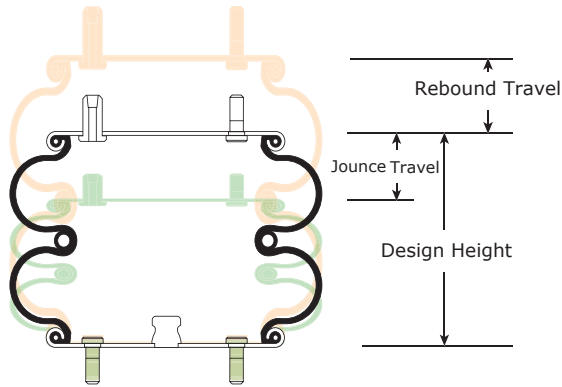
Spring Overview

1T Style



- ① Design Height
- ② Design Load
- ③ Rebound Travel
- ④ Jounce Travel

Convolute



- ① Design Height
- ② Design Load
- ③ Rebound Travel
- ④ Jounce Travel

Is this a lift spring application?

- a. If YES, Maximum Lift Height:
- b. If YES, Load at Maximum Lift Height:

Travel Study

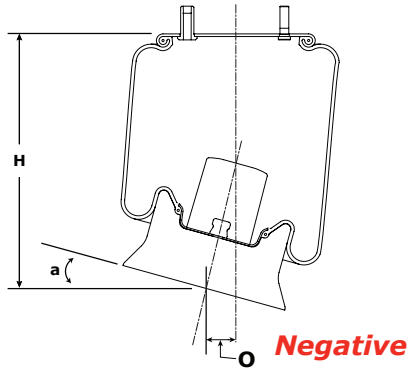
Note: offset dependent on axle location methodology.

H = Height

O = Offset

a = Angle

Side View Travel Study



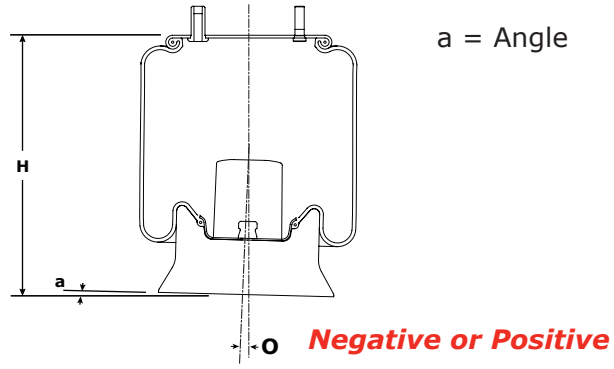
Rebound

Height =

Offset =

Angle =

Angle =

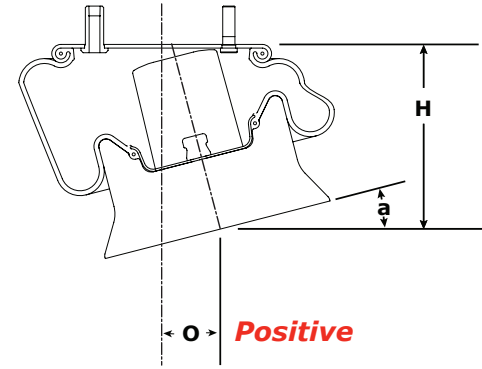


Design Height

Height =

Offset =

Angle =



Jounce Height

Height =

Offset =

Angle =

End View Travel Study - 'Articulation'

Max Values

Left

Right

○ Std Hgt =

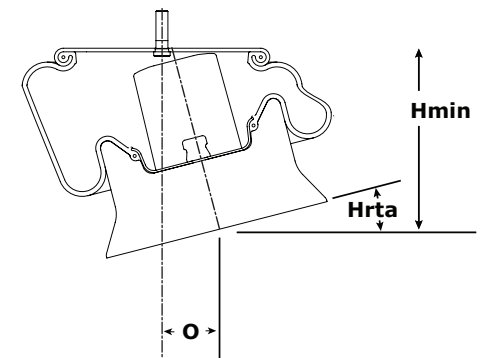
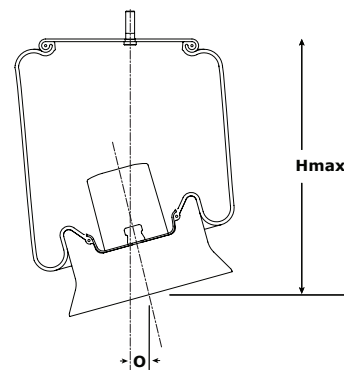
○ Rebound =

○ Jounce =

Hrta =

Hmax =

Hmin =



Operating Parameters

L1 - Pivot to Wheel Center:

L2 - Pivot to Center Piston Mounting:

Normal Operating Loads Min:
 (at spring) Max:

Design:

Site Rating (If applicable):

Target Spring Rate or Frequency:

OD - Max Permissible Diameter:

Leak Rate Requirement:

Internal Bumper Required:

Contact Height:

Maximum Operating Air Pressure possible:

Air Retention w/o air supply needed?:

Will spring be completely evacuated in use?:

Environment

Temperature: Min: Max:

Proximity to Heat Source:

Expected Maximum Temperature of Source:

Vehicle usage/type:

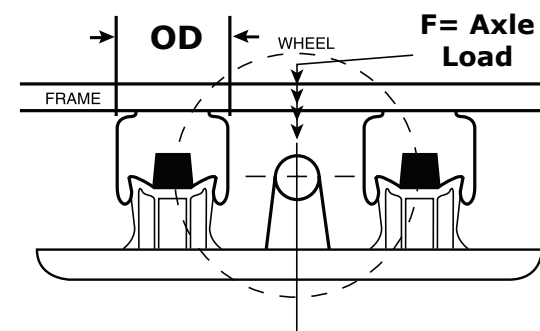
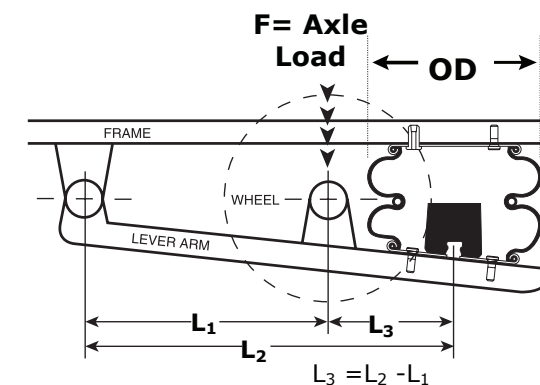
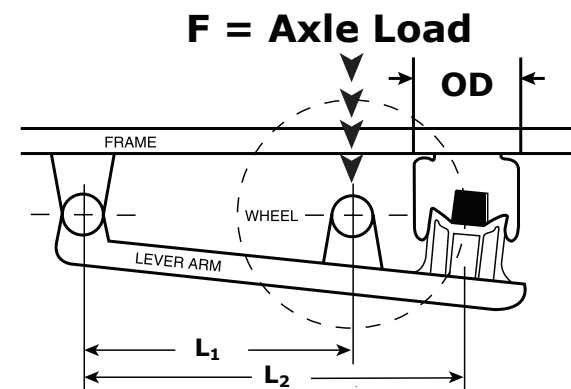
(Vocational, over road, off road, etc)

Corrosion Spec:

Corrosive Resistance Requirements:

Customer Special Notes:

Select
Suspension
Style



Vehicle Interface Data

Please provide CAD/documentation to FSIP Engineering for the following:

Air Fitting Location:

Air Fitting Sizing/Requirements:

Preferred mounting method (Bead Plate):

Preferred mounting method (Piston):

Vehicle Interface Data

Bead Plate

Firestone Bead Plate No. (if known):

Mounting Surface Size:

(Note: Flat Area Only)

Offset:

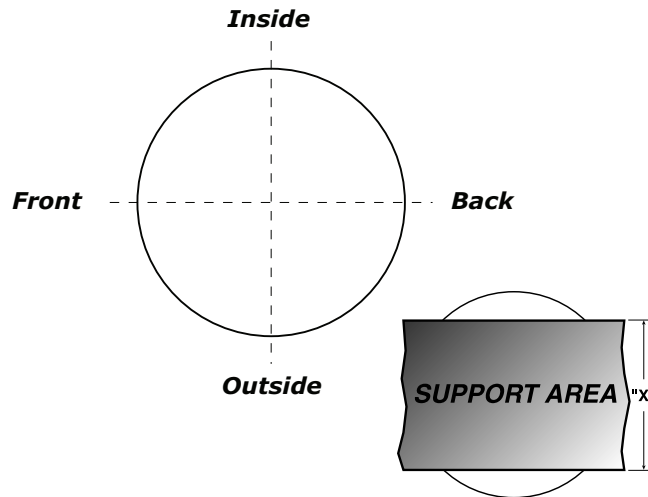
(Mounting Surface CL to B/P CL)

Attachment to Frame Details:

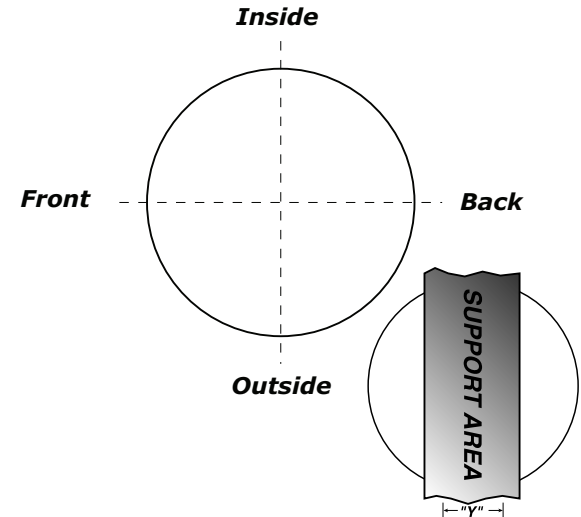
Internal Height Sensor:

Bracket:

Bead Plate Support Area:



Piston Support Area:



Piston

Firestone Piston No. (if known):

Material:

Beam:

Pedestal:

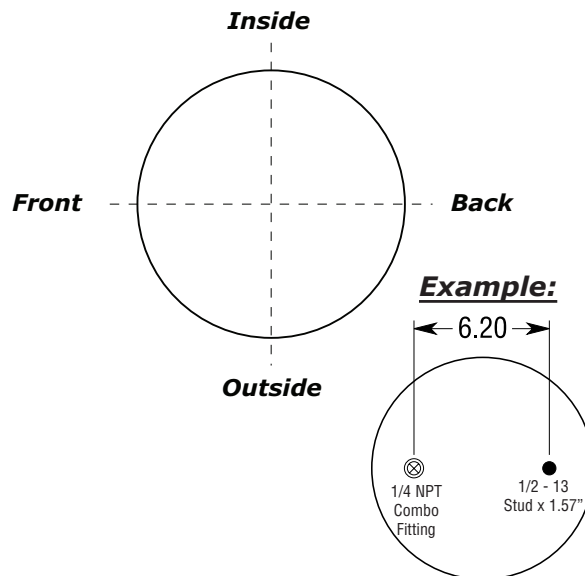
Manufacturing Method of Beam:

(Cast, Fabricated, Rolled Beam)

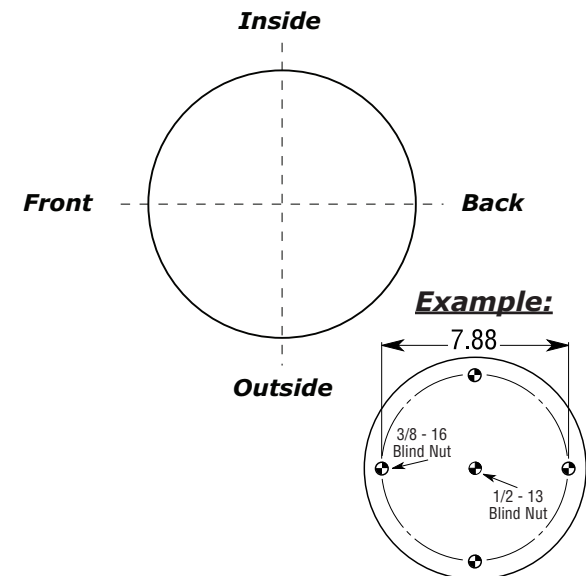
Surface Finish:

Flatness:

Bead Plate Fastener Detail:



Piston Fastener Detail:



Assembly

Alignment Tolerance:

Hardware Key

- Bolt or Stud
- ⊙ Threaded Hole Blind Nut
- ⊗ Air Inlet N.P.T.
- ⊗ Combination Stud/Air Inlet Stud Outside Thread
- ▲ No alignment specified-center stud mounting is standard

Customer Validation/Testing

Specify Testing for Air Spring Validation & Pass Criteria:

Test Set-Up Criteria: Load: Pressure: Height:

Hot/Cold Testing

Durability Testing

Off-Road Testing

Environmental Testing

Burst Testing

Leak Testing

Pressure Retention

Fatigue

Ambient

At Temperature:

Other Testing to be
Performed by
Firestone (Explain)

On-Site Customer
Testing/Customer
Specific Testing:

Specific System Sign-Off Criteria:

Special Rig Test Requirements:

Additional Information:

Additional Important Information

Label Requirements:(Please attach a sample if special requirements are needed)

Post-Install Shipping and Storage Plan:

Please include any available information with request:

Suspension Drawing

Air Spring Drawing

Test Specifications

Configuration or Performance Notes

Technical Specification Sheet

Final Notes/Information: