Firestone

Firestone Industrial Products

Commercial Vehicle Seat 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: No

a) Date Required: _____

b) Quantity Required: _____

PPAP Required: No

a) PPAP Target Date: _____

b) PPAP Level Required: _____

c) Please Attach Any Special PPAP Requirements

Date Required: _____

Quantity Required: _____

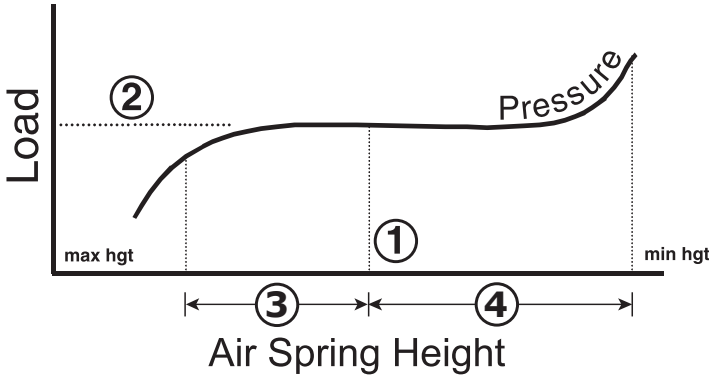
Packaging Requirements:

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

Scissor Lift

Standard Profile



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

Travel Study

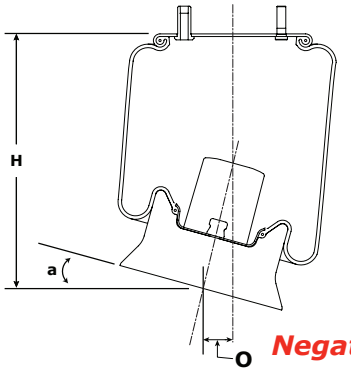
Note: offset dependent on Seat Design

H = Height

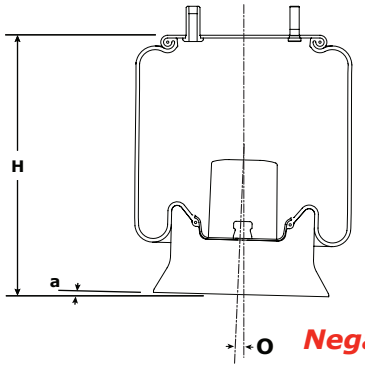
O = Offset

a = Angle

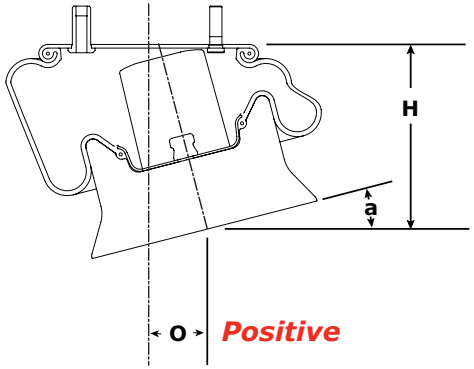
Side View Travel Study



Negative



Negative or Positive



Positive

Rebound

Height = _____

Offset = _____

Angle = _____

Angle = _____

Design Height

Height = _____

Offset = _____

Angle = _____

Jounce Height

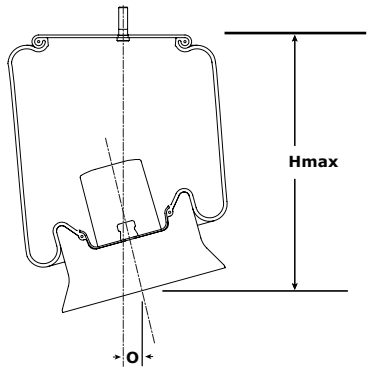
Height = _____

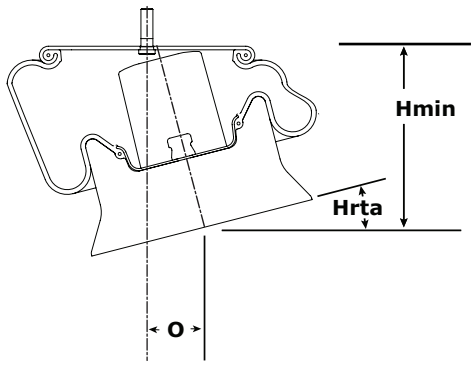
Offset = _____

Angle = _____

End View Travel Study - 'Articulation'

Max Values	***Left***	***Right***
O Std Hgt =	_____	_____
O Rebound =	_____	_____
O Jounce =	_____	_____
Hrta =	_____	_____
Hmax =	_____	_____
Hmin =	_____	_____





Operating Parameters

L1 - Pivot to Mass Center: _____

L2 - Pivot to Center Piston Mounting: _____

Normal Operating Loads *(at Spring)*

Min: _____

Max: _____

Design: _____

Target Spring Rate or Frequency: _____

OD - Max Permissible Diameter: _____

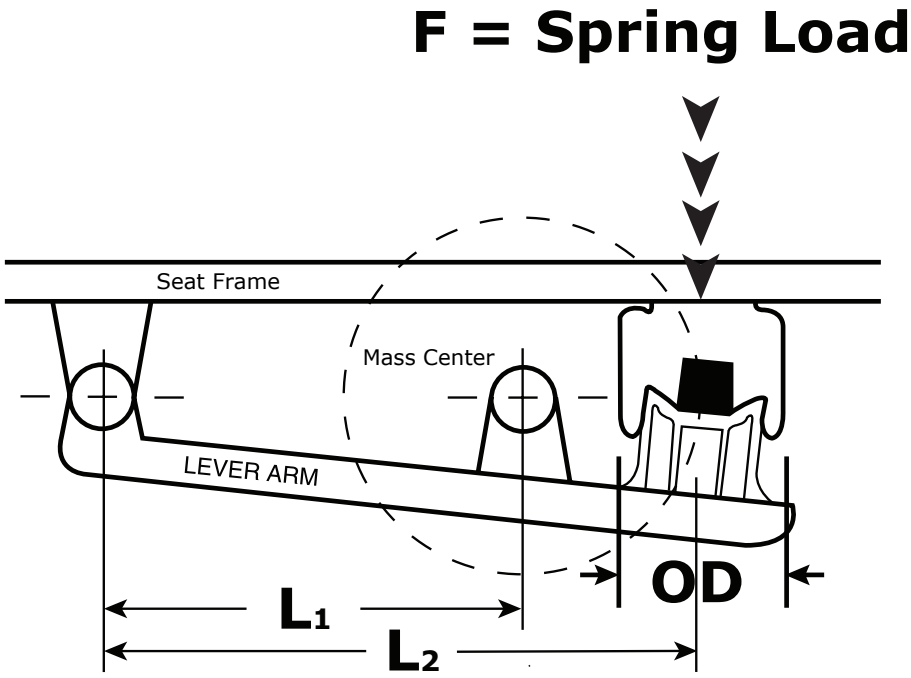
Leak Rate Requirement: _____

Internal Bumper Required: No Contact Height: _____

Maximum Operating Air Pressure possible: _____

Air Retention w/o air supply needed?: _____

Will spring be completely evacuated in use?: No



Environment

Vehicle usage/type: _____

(Vocational, over road, off road, etc)

Customer Special Notes:

Vehicle Interface Data

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

Air Fitting Location: Piston

Air Fitting Sizing/Requirements:

Preferred mounting method (Cap):

Preferred mounting method (Piston):

Vehicle Interface Data

Cap

Firestone Cap No. (if known): _____

Mounting Surface Size: _____

(Note: Flat Area Only)

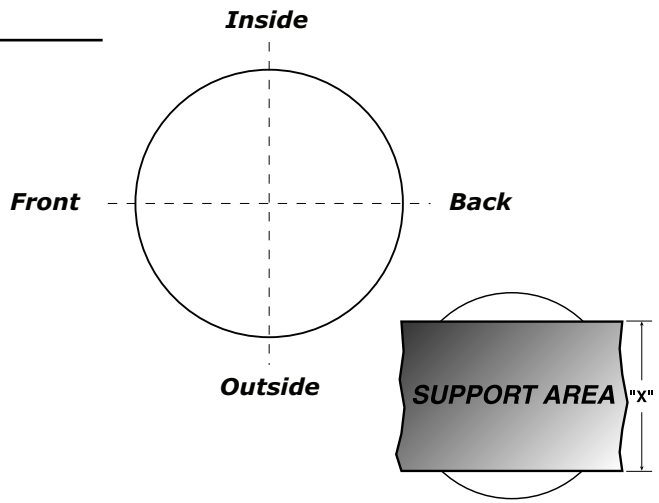
Offset: _____

(Mounting Surface CL to Cap CL)

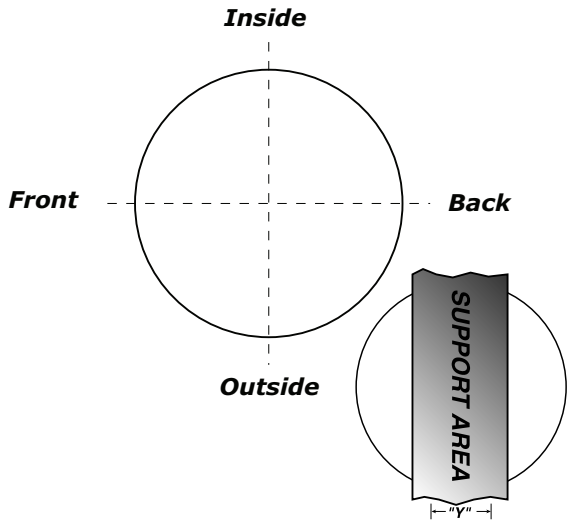
Attachment to Frame Details: _____

Bracket: No

Cap Support Area: _____



Piston Support Area: _____



Piston

Firestone Piston No. (if known): _____

Material: Aluminum

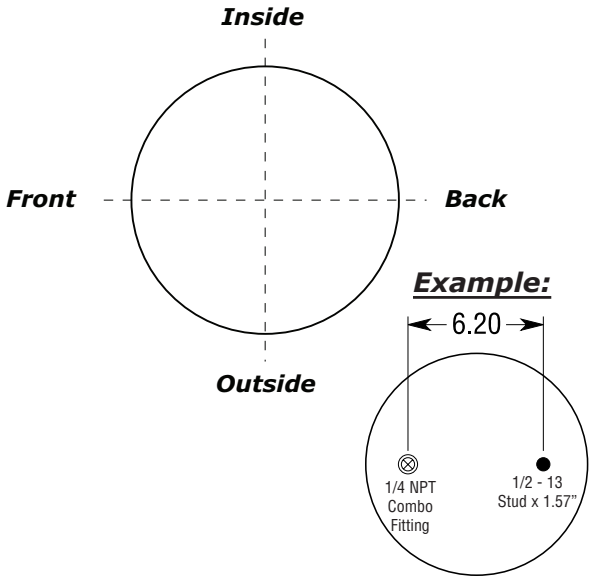
Surface Finish: _____

Flatness: _____

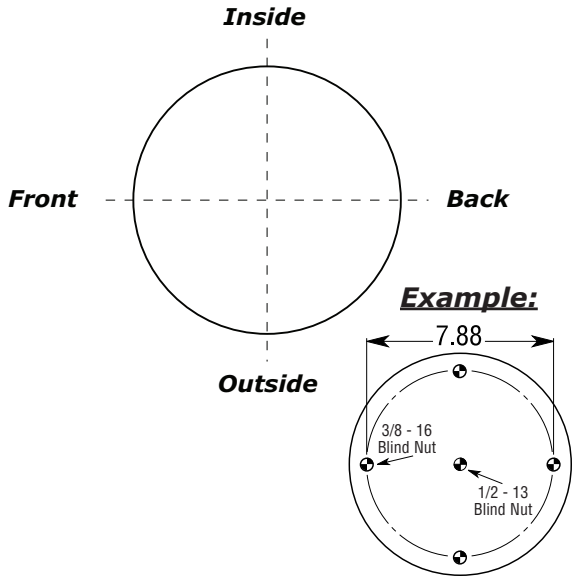
Support Area Sketch/Description:

(Mounting Surface Size, Attachment to frame or structure, etc.)

Cap 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: