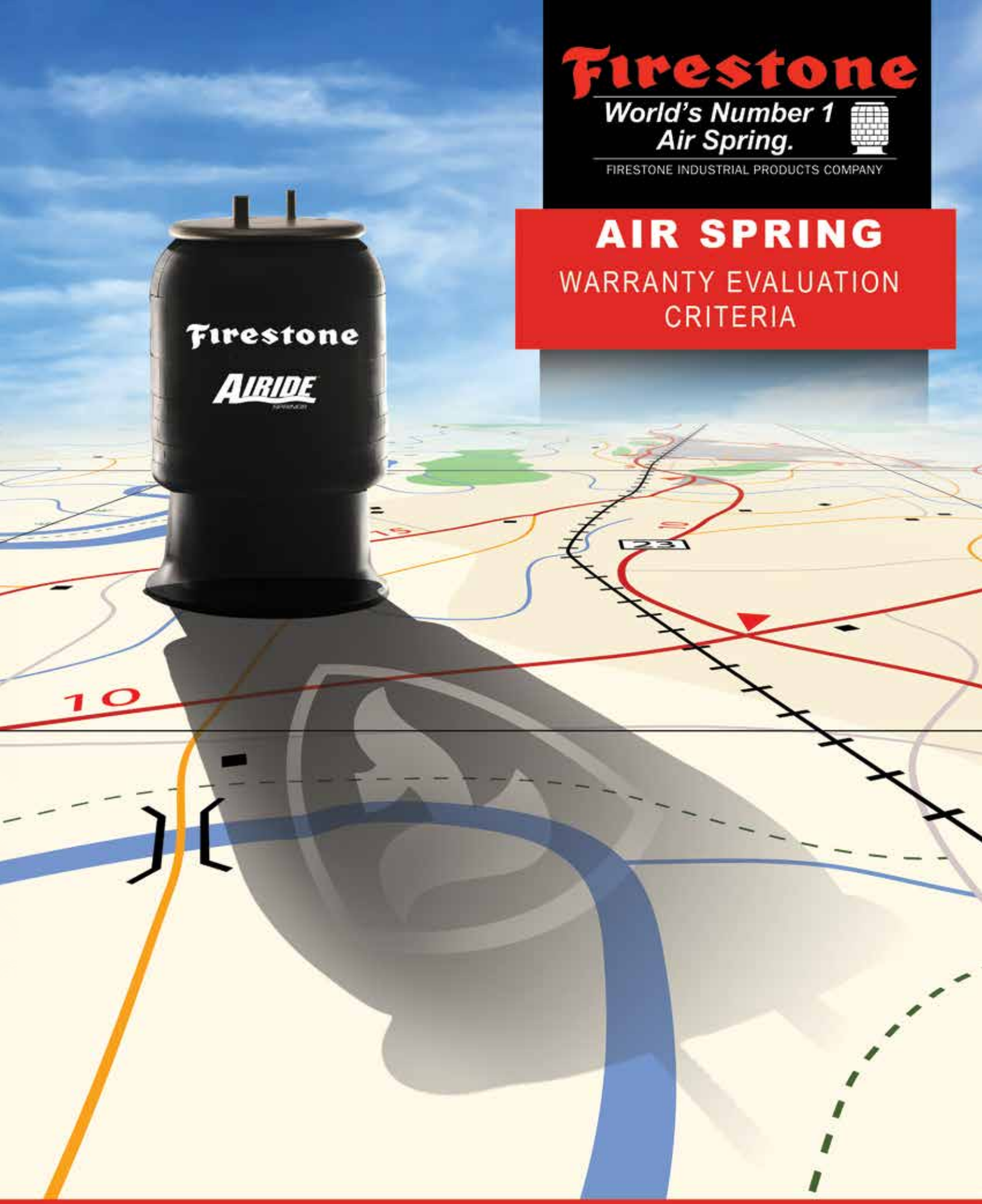


Firestone

World's Number 1 Air Spring.

FIRESTONE INDUSTRIAL PRODUCTS COMPANY

AIR SPRING

WARRANTY EVALUATION CRITERIA

WWW.FIRESTONEIP.COM

Firestone air springs are designed to provide years and thousands of miles of trouble free service. The durability of Firestone air springs is such that they will often outlast other maintenance items on your suspension, such as bushings, shocks, leveling valves or regulators. Airide springs by Firestone are warranted to be free of material defects and/or workmanship for 3 years or 300,000 miles (480,000 kms) whichever occurs first.

Firestone Industrial Products Company offers a complete line of Airide springs, with replacement springs available for virtually every vehicular air suspension system.

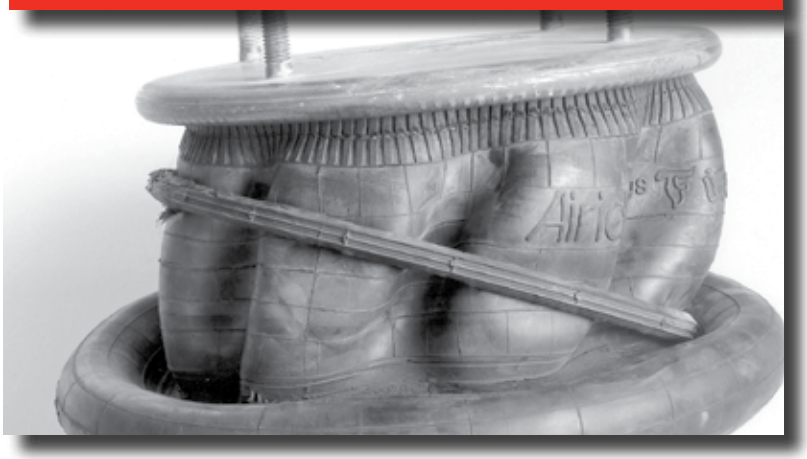
Since each individual air spring is closely examined and pressure tested at the factory, the vast majority of premature failures and consequent warranty returns are found not to be defective, but fail because of abuse caused by other problems associated with the suspension.

Before you install a new air spring, you should carefully examine the old one to determine what caused it to fail. If it was due to a defect in the suspension system, then the new air spring may also fail unless you correct the problem.

The information on the next two pages was developed to illustrate the types of failures that may occur, and to assist you in determining the cause and corrective action required.

When applied and maintained properly, Airide® springs can provide thousands of miles of trouble-free service. Most failures are caused by a lack of suspension maintenance or improper application. This is a guide to common air spring failures that are not covered by warranty.

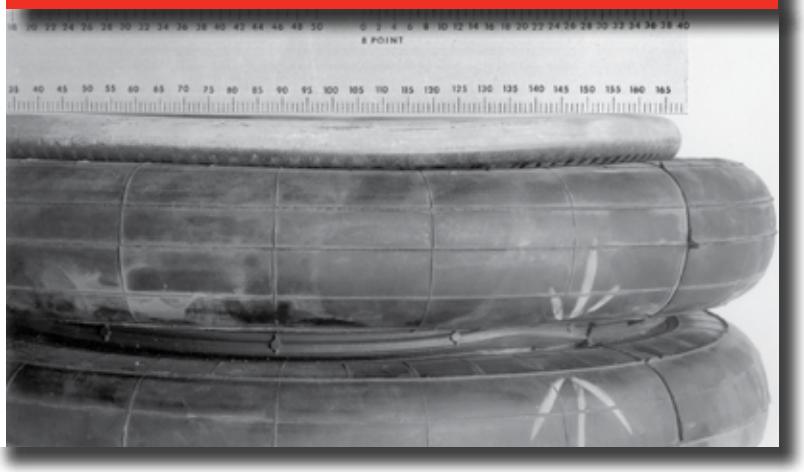
LOOSE GIRDLE HOOP



Appearance or Condition
- Rubber bellows distorted and girdle hoop torn loose

Possible Causes
- Running at extended positions with low air pressure

BOTTOMING OUT



Appearance or Condition
- Bead plate concave
- Internal bumper loose
- Hole in girdle hoop area (convoluted)
- Hole in bead plate junction area
- Leaking around blind nuts

Possible Causes
- Broken or defective shock absorber
- Defective leveling valve
- Overloaded vehicle
- Pressure regulator set too low
- Wrong air spring (too tall)

MISALIGNMENT

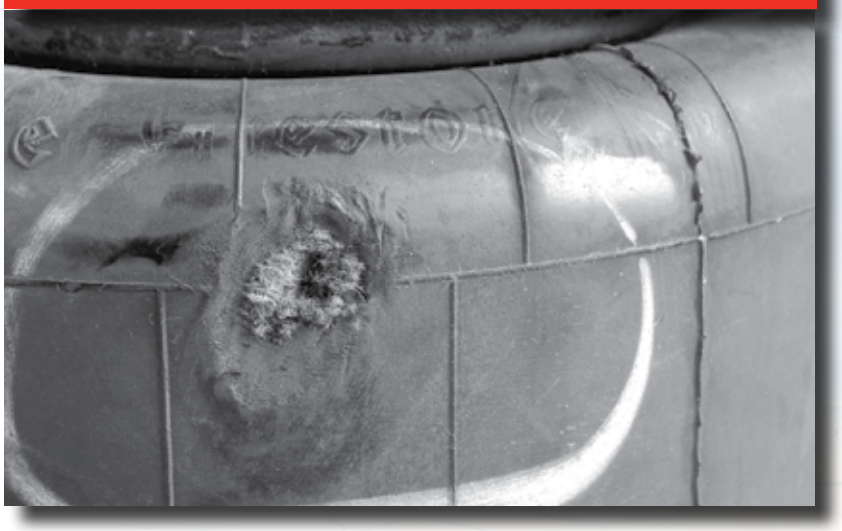
Appearance or Condition
- Off-center bumper contact
- Same as abrasion or bottoming out

Possible Causes
- Worn bushing
- Improper suspension installation

Warranty Evaluation Criteria

AIRIDE SPRINGS

ABRASION



Appearance or Condition
- Hole rubbed into side of bellows
- Hole in bellows area that rolls over piston (reversible sleeve style)

Possible Causes
- Structural interference, such as:
  - -broken shock
  - -loose air line
  - -misalignment
  - -worn bushings
- No air pressure (reversible sleeve style)
- Foreign material (sand, rocks, etc.)
- Wrong air spring

CIRCUMFERENTIAL CUTS

Appearance or Condition
- Bellows cut in circle at bead plate junction
- Bellows cut in circle at piston junction (reversible sleeve style)

Possible Causes
- High pressure, fully extended for long periods of time
- Impact in compressed position

OVER EXTENSION

Appearance or Condition
- Bead plate convex, especially around blind nuts or studs
- Rubber bellows separated from bead plate
- Leaking at blind nuts or studs
- Leaking at end closure (reversible sleeve)
- Loose girdle hoop on convoluted style

Possible Causes
- Broken or wrong shock absorber
- Defective leveling valve
- Ride position too high
- Defective upper stop (lift)
- Wrong air spring (too short)

PREVENTATIVE MAINTENANCE CHECKLIST

Listed below are items that can be checked when the vehicle is in for periodic maintenance.

Never attempt to service the air suspension on a truck or trailer with the air springs inflated.

1. Inspect the O.D. of the airspring. Check for signs of irregular wear or heat cracking.
2. Inspect air lines to make sure contact doesn't exist between the air line and the O.D. of the air spring. Air lines can rub a hole in an air spring very quickly.
3. Check to see that there is sufficient clearance around the complete circumference of the air spring while at its maximum diameter.
4. Inspect the O.D. of the piston for buildup of foreign materials. (On a reversible sleeve style air spring, the piston is the bottom component of the air spring).
5. Correct ride height should be maintained. All vehicles with air springs have a specified ride height established by the O.E.M. manufacturer. This height, which is found in your service manual, should be maintained with-in 1/4". This dimension can be checked with the vehicle loaded or empty.
6. Leveling valves (or height control valves) play a large part in ensuring that the total air spring system works as required. Clean, inspect and replace, if necessary.
7. Make sure you have the proper shock absorbers and check for leaking hydraulic oil and worn or broken end connectors. If a broken shock is found, replace it immediately. The shock absorber will normally limit the rebound of an air spring and keep it from overextending.
8. Check the tightness of all mounting hardware (nuts and bolts). If loose, re-torque to the manufacturer's specifications. Do not over-tighten.

CLEANING

APPROVED: Approved cleaning media are soap and water, methyl alcohol, ethyl alcohol and isopropyl alcohol.

NON-APPROVED: Non-approved cleaning media include all organic solvents, open flames, abrasives and direct pressurized steam cleaning.

The total inspection process described on this page can be done in just a matter of minutes. If you find one of the above conditions exists, please take corrective action to ensure that it is fixed properly. It will save you both time and money.

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250 W. 96th Street
Indianapolis, IN 46260
www.firestoneip.com