

# ***PENSKE***

≡≡≡ RACING SHOCKS.® ≡≡≡



**PS-89XXPB-AIR (Motorcycle Shock Series)**

## ***TECHNICAL MANUAL***



**Main Office**  
150 Franklin St. • P.O. Box 1056  
Reading, PA 19603  
(610) 375-6180 • (610) 375-6190 Fax





## Introduction

Thank you for purchasing your new Penske Racing Shocks 8900 Series Motorcycle Damper!

Every Penske Racing Shock is 100% hand built and dyno tested for the best performance and customer satisfaction. We stand by our products and routinely assist customers in getting the best performance from their shocks. The same components in the 8900 Series are used all over the world at the highest forms of Motorsport.

All the fundamental attributes found in any Penske Racing Shock have been incorporated into the 8900 Series Motorcycle Shock including:

- *Stainless steel and heat-treated for strength. Aluminum components to reduce weight where applicable, and to ensure rigidity and durability.*
- *Simple, compact design for lightest weight and ease of installation.*
- *Winning heritage – Penske Racing Shocks continue to help our customers win races and championships in all forms of Motorsport.*
- *Made in U.S.A. – The majority of the parts found in your 8900 series shocks are manufactured right here in the USA!*

This technical manual is intended to guide you through installation, adjustment, fine-tuning, and maintenance of your shocks. Please carefully read this entire guide before attempting to install or adjust your suspension.



### Safety Warnings

This symbol, found throughout the manual, indicates important information, cautions, warnings, and safety procedures.



DOs



DON'Ts

### SHOCK CANISTER PRESSURE (REF PG.9)

 Penske Racing Shocks never recommends running lower than **100psi** in our shock's canister/piggyback depending on piston and shims being used. Lack of nitrogen pressure could result in "cavitation" which can result in loss of immediate damping and driver feel.

 We also do not recommend using pressure higher than **250psi**. This could result in stress fractures in main mounting components which may lead to sealing or other failures. Always check with Penske Racing Shocks technicians on recommended pressures for your application and use.

### AIR SPRING CHAMBER (REF PG.8)

 Penske Racing Shocks never recommends running lower than **150PSI**. Running lower than this recommended pressure can result in in-adequate support.

 We also do not recommend using pressure higher than **500psi**. Running higher than this pressure can result in seal failure in the air spring chamber.

- ✔ Before installing your suspension components, please read this technical manual in its entirety to ensure you understand all proper installation and adjustment procedures. If you are unclear with any of the information found in this manual, or have any questions, please contact Penske Racing Shocks with any questions regarding compatibility between motorcycles.
- ✔ Refer to your motorcycle manufacturer's service manual for recommended installation procedures.



Penske Racing Shocks offers a warranty on manufacturer's defects for a period of one year (1yr) from original purchase date.

- ✘ Any unauthorized modifications to the suspension product may null and void such warranty.
- Other than manufacturing defects, Penske Racing Shocks offers no warranty, expressed or implied, on any of its suspension products.
- ✔ A copy of the original invoice must be submitted as proof of purchase for any warranty claim to be considered.
  - ✘ Penske Racing Shocks cannot be held responsible for any other damage or injury whatsoever to the shock absorber/fork, vehicle, or any person involved in an incident with the owner.
  - ✔ Penske Racing Shocks reserves the right, at their sole discretion, to change, modify, add, or remove portions of this warranty policy at any time.

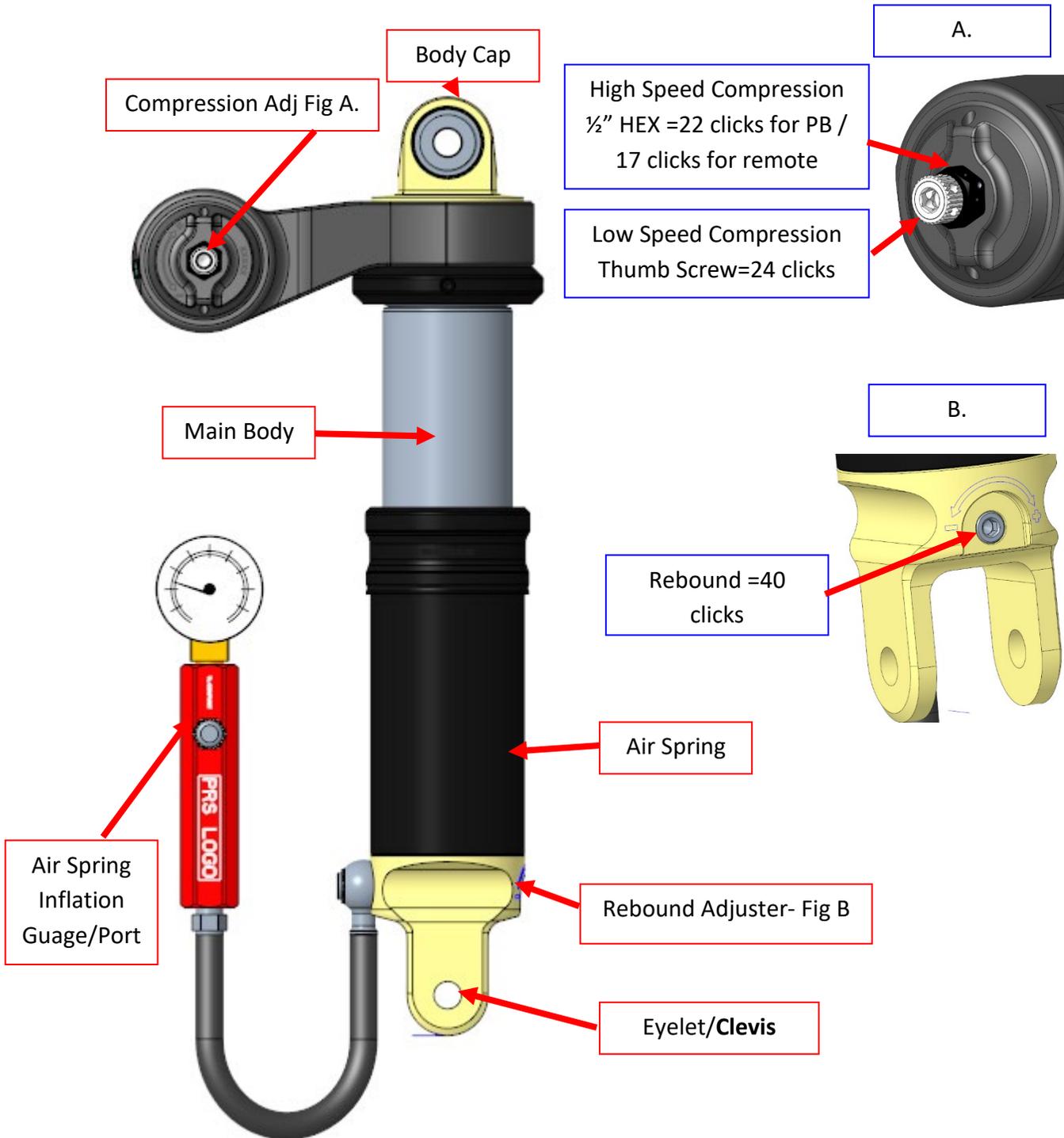
**Out of the Box:** Upon arrival of your Penske Racing Shocks Motorcycle Damper, you should find the following:

- Shock and Spring and/or Fork (**AIR SHOCK WILL NOT HAVE COIL SPRING**)
- Preload Tool (**AIR SHOCK WILL NOT HAVE TOOL**)
- Technical Manual
- Dyno Graph
- Blocks and Clamps/Bracket (**for Remote Reservoir/Canister option only**)

Your individual order may differ slightly as seen in the remote canister option pictured below, where mounting hardware is also included.



**Terminology**

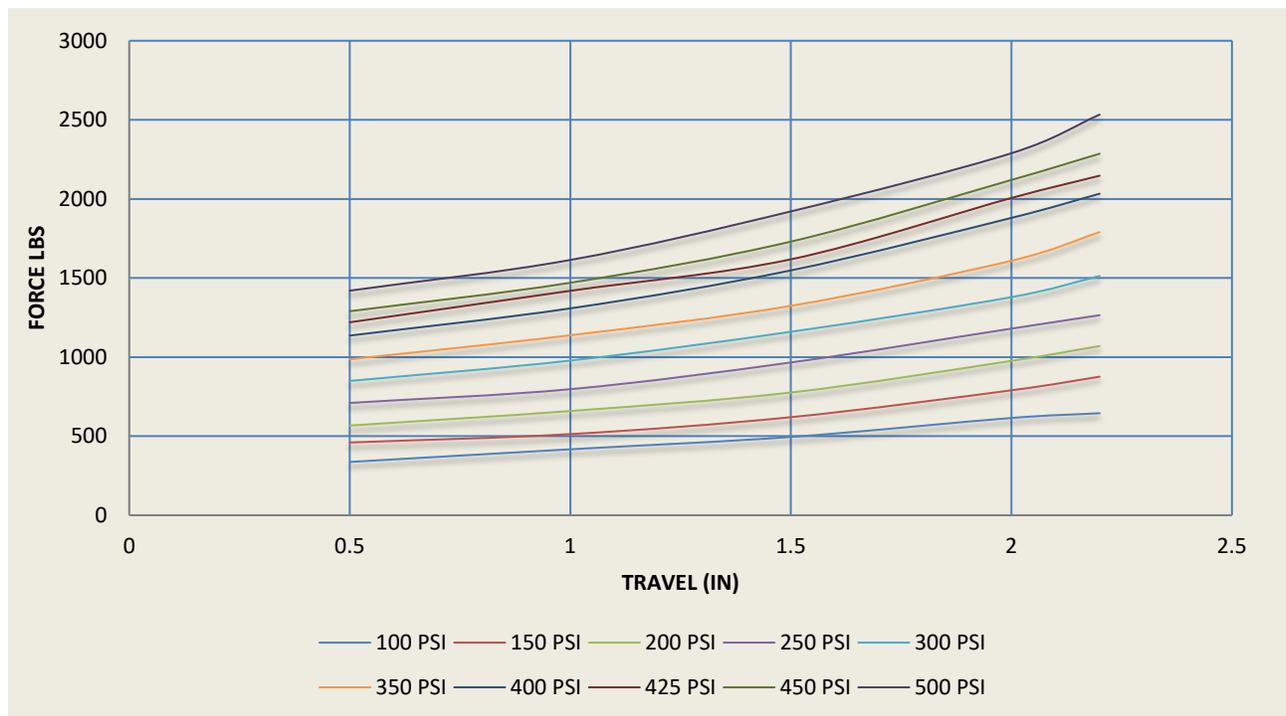


## To Set Spring Load



Your Penske Air Shock comes from the factory at a pre-determined setting based off your communication with your Penske Shocks technical representative or dealer. If you received this shock through a secondary supplier, or anyone other than an authorized Penske Shock's dealer or factory representative, please contact Penske Racing Shocks for setup instructions.

To adjust your spring rate, it is recommended that after setting your pressure that coincides with the spring chart below, you have your shocks verified on a spring rate machine if possible.

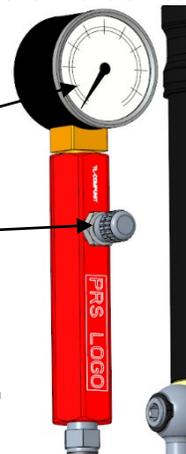


## Adjusting AIR Spring Pressure



It is recommended, if possible, to use nitrogen or filtered dry air. Any moisture in the air can cause inconsistent performance.

- Shock should be fully extended with no “zero” pre-load on shock.
- Remove valve cap from Air Spring Inflation Gauge.
- Inflate using recommended nitrogen or dry air.
- Note pressure on gauge.
- Be sure to replace the valve cap.



## Checking/Adjusting AIR Spring Pressure



When checking AIR Spring pressure, it is recommended to use a certified pressure gauge from Penske Racing Shocks or another certified supplier. (tool pictured below \*P# TL-COMP-UNIT)



## Damping Adjustments

### Adjustment Recommendations

#### Drag Racing Tuning: Symptoms and Suggestions

1. Change only one adjustment at a time and send the rider out for evaluation and feedback.
2. Take notes: rider comments, lap times, tire conditions, and current weather conditions.
3. Be patient, go back to your original settings if you get lost.

#### Symptom:

#### Tuning List:

#### **Harsh/Stiff/Wheel Spin on start:**

1. Go softer with low speed compression, 2 to 4 clicks at a time (counter-clockwise).
2. Go softer with high speed compression, 1 to 2 clicks at a time.
3. Slow rebound, 2-4 clicks at a time
4. Increase rear sag, lower AIR spring pressure

NOTE: Too soft on compression or too slow of rebound can bring about a harsh feeling.

**Excessive wheel spin:**

1. Repeat the above steps.
2. Rebound can be too fast, allowing the rear to unload and spin the tire.

**Wallowing down track:**

1. Stiffen low speed compression, 2-4 clicks at a time.
2. Stiffen high speed compression, 1 to 2 clicks at a time.
3. Slow down rebound, 1 to 2 clicks at a time.

**Compression Adjuster:**

This adjuster is typically used when looking to improve the bike over bumps. If the bike is hitting a certain bump that is causing it to “unload” the tire, simply soften the compression adjustment. This will allow the shock to absorb the bump, keeping the bike more stable and more controllable.

Closing the compression will slow the weight transfer of the bike.

**Rebound Adjuster:**

The rebound adjuster is a great tool for tuning and is the more rider sensitive adjustment than compression damping. To slow how quickly the bike is coming up or pitching forward, simply close off the rebound. This will delay weight transfer, keeping the back of the bike planted longer.

**Important!!** It is possible to over adjust. Always have a baseline to go back to!

**QUICK TIPS:**

**To Increase Bite:**

Soften compression or slow the rebound. Example: Hot and greasy track / bald spots on the start line

**To Decrease Bite:**

Stiffen compression or speed the rebound up. Example: Track conditions are at their best / start line is prepped and covered with good rubber.

Once again, this is a basic procedure for finding your initial setup for a given track. If you find that you are at the end of your adjustment range and feel that the bike is feeling better, you will need to revalve the shocks to allow for further adjustment in the given directi

## Troubleshooting:

### Loss of Nitrogen Pressure:

Valve core is not tight or needs replacing, o-ring on air valve needs replacing, reservoir cap o-ring needs replacing, leaking quad ring, or dowty seal.

### Shaft will not fully extend:

Check for bent shaft, low nitrogen pressure. **Note: do not spray brake cleaner or solvent on the shaft wiper, as it may cause it to swell and prevent proper movement.**

### Loss of AIR Spring Pressure:

If the shock for some reason loses its AIR Spring charge, a tell-tale sign of reduced or no pressure is that the shock will compress very easy, and will not return to its fully extended position, or gradually gets much slower when reaching full extension.

Penske Shocks recommends checking AIR Spring pressure before each race.

## Technical Support:

8:30 AM – 5:00 PM (EST)  
Monday-Friday

Penske Racing Shocks – Technical Center  
150 Franklin Street  
Reading, PA 19602  
United States

610.375.6180  
[www.penskeshocks.com](http://www.penskeshocks.com)



**Apparel and Accessories:**



Rev. April 22, 2025