Rockeater Tune Kits

Marzocchi Bomber CR 2020+

Installation Instructions

serious bicycle suspension shockcraft

***WARNING:* Rear shocks contain pressurised oil and gas. If you do not know what you are doing then leave this to someone who does. This guide is for those familiar with rear shock service.**

Introduction

Shockcraft Rockeater Tunes solve factory issues while providing a great feeling high performance tune with both chassis control and the ability to eat rocks at speed. The Rockeater Tune Kit for the Marzocchi Bomber CR 2020+ (also fits Fox Vanilla RC 2011+) is a self-install kit with a complete new midvalve, including piston, check valves, metric shims, and base valving. This Rockeater Tune makes these shocks fun and predictable without harshness and lag. It increases both support and compliance. We also have a Rockeater Tune HALF Kit which provides 70% of the performance you get from the full kit but has much easier installation. The HALF kit comes with a pre-assembled midvalve with shims, which simply bolts into place of the original assembly.

Kit Contents

- Shockcraft Engineered Damper Piston, Base Valve Bolt (excluded in Half Kit), Midvalve Stud & Check Plate
- Shim kit. Shim sizes and thicknesses have been chosen so you don't need to accurately measure them.
- A paper tune drawing to scale. This shows your specific tunes for rebound and compression and lays out the shims required for each.

Figure 1. Eyelet (left) & Trunnion (right) versions of the Marzocchi Bomber CR coil shocks.

Shock Details

The Marzocchi Bomber CR is a piggyback style coil-over rear shock. The piggyback contains a gas pressurised IFP (internal floating piston), which compensates for shaft volume and prevents cavitation. The Fox Van RC is an earlier version of effectively the same shock.

The rebound dial is on the shaft eyelet, the compression dial is on the piggyback branch. These shocks are available in a range of different sizes and with eyelet or trunnion style mounting. There is an IFP rubber plug valve on the end of the piggyback used to charge/discharge IFP pressure and a bleed screw on the piggyback branch.

Trunnion versions (at right in Figure 1) have threaded holes in the side of the head and shorter eye-to-eye (i2i) length for the same stroke. Eyelet versions (at left in Figure 1) have the same mounting holes each end. Internally they are identical. Fox versions were bronze coloured instead of black.

A Fox Van R version also exists which has no compression adjuster or base-valve assembly in the piggyback. While the our Rockeater Tune Kit will fit that shock it hasn't been tested and will provide a significantly softer result.

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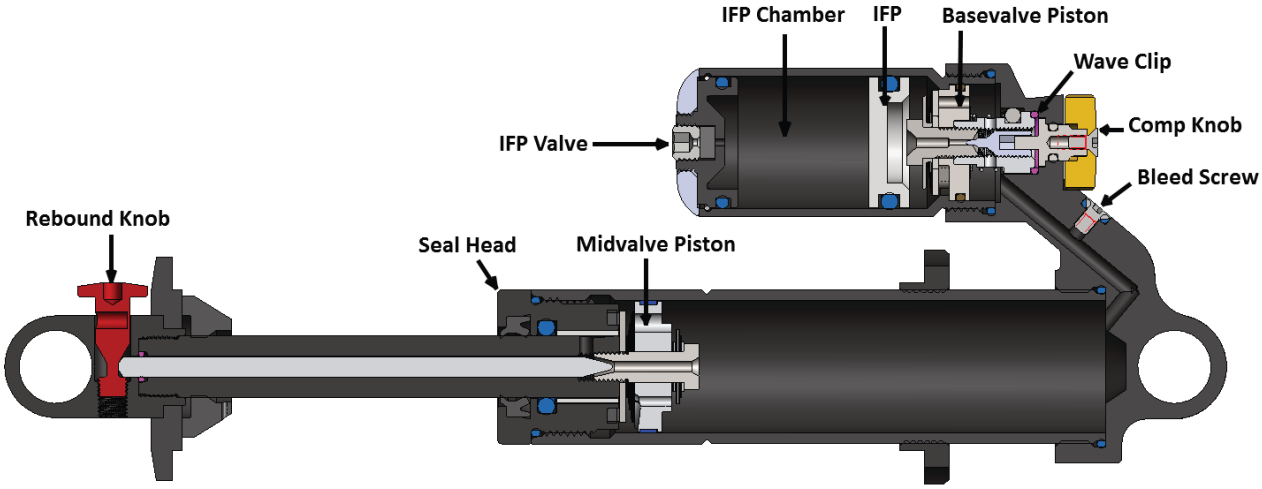

Figure 2. Diagram of Marzocchi Bomber CR rear shock.

Tools Recommended

- Hex key (allen key) set with & 2-5 mm range
- Adjustable spanner (crescent wrench)
- Bench vise with soft-jaws
- Clamp block with 30.5 & 31.8 mm clamps (Shockcraft version is ideal, as shown in Figure 3)
- #6 bleeding tools if vacuum bleeding
- 3/8" socket
- 10 mm socket
- 10 mm open ended spanner
- 6 mm nut (10 mm across the flats)
- Digital or Vernier calipers (optional but recommended)
- Torque wrench (optional but recommended)
- 1" (25.4 mm) crowfoot spanner to fit torque wrench
- Shock pump capable of 300 psi or nitrogen system
- IFP recharge needle if using the rubber pellet system
- Shockcraft Faux IFP Valve kit if not using rubber pellet system
- Valve core removal tool if using the Faux IFP valve kit
- Air compressor with gun attachment
- Heat gun

Fluids & Grease

- Stock oil – Torco RSF Medium or Fox 10 wt. These are too thick.
- Shockcraft recommended oil:
  - Standard - Motorex 2.5 wt
  - Heavy duty - Shockcraft Hot Oil Green
  - Extreme temperatures - Shockcraft Hot Oil Pink
- Grease - Slickoleum or Motorex Suspension Grease

Torque Settings

- Damper top-cap to tube – 40 Nm
- Knob screw (2 mm hex) – 0.5 Nm
- Bleed screw (2 mm hex) – 1 Nm
- Piston bolts – 5 Nm
- Damper tube to shock head – 10 Nm with red Loctite
- Piggyback tube to shock head – 8 Nm
- Faux IFP Valve - 2 Nm

Supplies

- Replacement rubber pellet for IFP (if not using Faux IFP Valve kit)
- Red Loctite 271
- Gloves
- Lint free rags
- Beakers or cups to collect drained oil
- Clean work-space

Fluids and grease can be purchased with the Rockeater Tune Kit or separately at Shockcraft using the links at left.

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Disassembly

First open all the adjusters. Especially the rebound.

Once the spring and mounting hardware is removed the shock must be depressurised. The IFP valve has a plastic anti-tamper ball inside and a surrounding lock-ring collar which can be safely removed first, as the IFP pressure stops it spinning endlessly. Sometimes the anti-tamper ball can be removed with a pick. We prefer to drill a 2.5 mm hole in it and pull it with a wood-screw.

The IFP valve screw can be undone slowly with a 4 mm hex key to release the IFP pressure. Remove the IFP screw and the rubber pellet behind it.

Check the shock is depressurised and the shaft doesn't return when depressed before continuing.

Push the IFP cap down and use a thumb-nail to flick the wire retaining clip to 90 degrees and pull it out. Pull out the IFP cap using the Faux IFP valve stem and your shock pump. If the cap won't push down then you have trapped IFP pressure, a foamed up shock or you forgot to remove the IFP lock ring collar. Check the rubber pellet is all out to release any IFP pressure. If the shock is foamed you will need to carefully unscrew the bleed screw and it will spray oil. Take precautions.

Once the IFP is opened, clamp the body eyelet or trunnion in a soft-jaw vise and undo the damper cap seal-head with a large adjustable spanner done up close. Draw out the cap and pour out the old damper oil.

Now push the plastic IFP down as far as you can by hand to push the remainder of the oil to the damper tube and pour that out too.

Disassembly for Rockeater Tune HALF Kit Install

If you are only installing the HALF kit this is almost as far as you will need to dismantle the shock. Thread the damper cap and shaft back in by hand. Remove the bleed screw, hold a rag over the end of the piggyback and use short bursts of compressor air to pop out the plastic IFP. Flush the old oil out and proceed to Midvalve Tune Installation on page 5.

Further Disassembly for Rockeater Full Kit Install

You need to remove the piggyback tube from the upper branch casting. This requires heat and tooling. First, peel the sticker off the piggyback. It cannot be saved.

Option 1: Fit the Shockcraft clamp block around the piggyback tube and tighten the bolts to clamp (see Figure 3). Place the clamp in soft-jaws and prepare a large adjustable spanner to twist the shock head. Heat the junction with the heat-gun to soften the factory Loctite and crack it loose (see Heating Tip below). You can only get half a turn and then will need to reposition the clamp several times to remove.

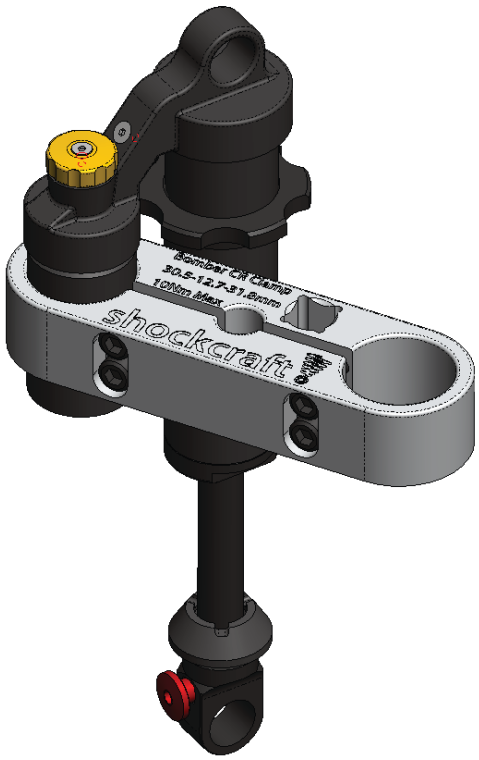

Figure 3. Piggback fitted in Shockcraft clamp block for removal of piggyback tube.

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Heating Tip: The point at which you no longer want to touch hot parts is about 60°C. This is usually enough heat to soften/loosen Loctite without damaging anything.

Once the piggyback reservoir tube is removed you can pull out the base valve assembly and push out the plastic IFP.

Option 2: Alternatively you can remove the main damper tube first (keep the damper cap installed to support the tube) with full revolutions and then remove the piggyback tube with full revolutions. Position shown in Figure 4. This is easier on some shock lengths than others.

Base Valve: There is a steel wire clip in the hole the base valve came from that is usually broken into 2-3 pieces. If your shock had a knock or click this will be the cause. Fish that out.

Dismantle the base valve with a 10 mm spanner across the lower flats and a 3/8" socket on the top bolt. Be careful the locating ball doesn't fall out of the base.

Cleanup

It is now time to strip and clean everything. Replace any o-rings you require. It is quite important to remove all flakes of loctite from removed joints as these can cause leaks or hold shims open to ruin your damping.

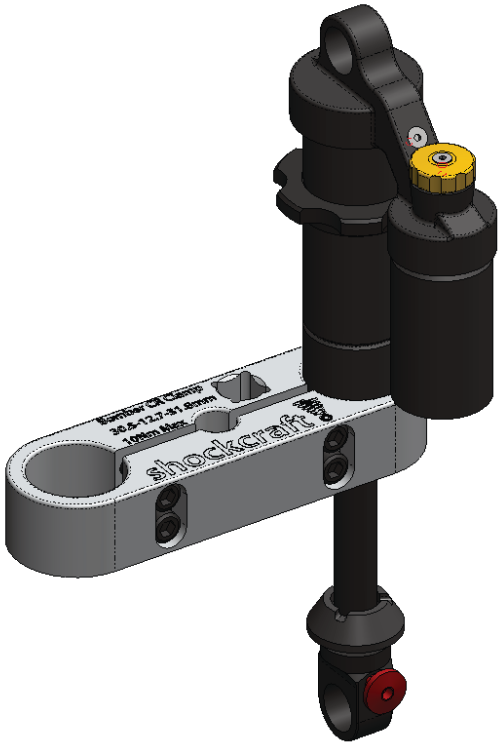

Figure 4. Main damper tube fitted in Shockcraft clamp block for removal.

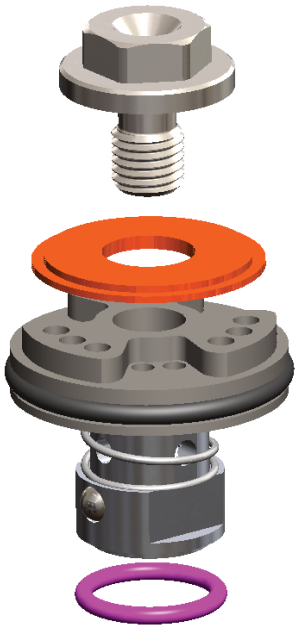

Figure 5. New tuned base valve assembly with Shockcraft base valve metric shim stack and piston bolt.

Base Valve Tune Instllation (Full Kit Only)

The new tuned based valve assembly is shown in Figure 5. Select the metric base valve shim stack and new base valve piston bolt from the tune kit. Assemble the shim stack (yours may look different) and bolt in place by hand. Take care not to trap the check shim under the piston on the mount or the 8 mm shims above on the step in the bolt. Check it screws down flat and evenly.

Torque the bolt to 5 Nm. Install the hard o-ring (it's black, not pink) on the base as shown in Figure 5. Now fit it by hand into the piggyback branch. Note the locator ball is opposite the main damper tube as shown in Figure 6.

With the base valve down, use the compression adjuster to fully close the internal needle then back it off 1 turn. This engages the needle and prevents it binding. Now thread the piggyback reservoir tube down by hand until it stops. Check compression adjuster still moves and use the clamp block to tighten the tube to 8 Nm.

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Figure 6. Install of base valve in piggyback.

Install the main tube when you are ready for final assembly. Red Loctite must be used on the threads to prevent it being unscrewed by the action of the spring. This tube is fully torqued when the damper cap is torqued, which should be done within an hour of applying loctite. Otherwise you'll just break the partially cured loctite.

Midvalve Tune Installation

The midvalve part of the tune kits replaces everything on the end of the shaft. It has a new midvalve mount, piston, shims, check valve and nut that should be kept assembled. To remove the old piston, hold the shaft by the eyelet in the vice soft-jaws and unscrew the piston bolt with the 3/8" socket.

If you need to change seal-head seals then slide the seal head off the shaft and change as required. If you need to change the damper shaft then capture it in the 1/2" Shockcraft clamp in the vise with the eyelet end up, heat the eyelet to soften the Loctite and unscrew it with an adjustable wrench set tight across the faces. Clean, change needle o-ring, grease the knob balls/threads/ramp and reassemble with Loctite on the shaft threads. Torque to 25 Nm.

Open the rebound adjuster fully before installing any midvalve assembly. This makes bleeding much easier. Pushing down on the exposed needle with a smooth tool will help find the fully open position.

The new midvalve assembly (at right in Figure 7) is loctited on and torqued to 8 Nm by using the large hex plate. The M8 nut (13 mm socket) is only torqued to 5 Nm.

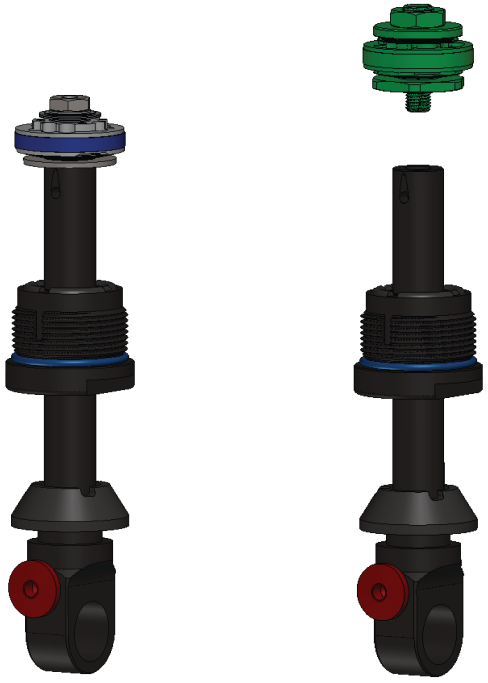

Figure 7. Stock midvalve assembly (left) and new Shockcraft midvalve assembly (right).

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Bleeding

There are two main methods to bleed this shock. Vacuum-bleeding or hand-bleeding. Vacuum bleeding is preferred as it ensures no air-pockets remain in the shock and degasses the damper oil in the process.

Vacuum bleeding requires a vacuum bleeding machine and #6 bleed fitting, which is attached to the bleed port near the compression dial.

Hand bleeding is not as good and is messy but requires a lot less equipment. There are alternative methods including syringe bleeds but they will not be covered here.

Hand Bleed Method

Start with the shock body upright in a vise or clamp (Figure 8) with no shaft or IFP installed. The bleed screw needs to be in place.

Fill the shock body up with oil slowly to the level of the top of the piggyback reservoir.

When oil has passed through the base valve and filled the reservoir to the top you can install the IFP. Push it just low enough to seal past the groove for the retaining wire clip.

Now fill the damper tube to the base of the threads and insert the damper shaft with cap.

Thread the cap down until the o-ring is almost making contact and push on the IFP to push oil up past the threads.

Close the damper cap and invert the shock so the bleed screw is uppermost. Pump the IFP and shaft to purge any air up to the top of the shock where the bleed screw is located, especially the pocket of air caught under the IFP during install. Be careful not to eject the IFP as you'll have to start again.

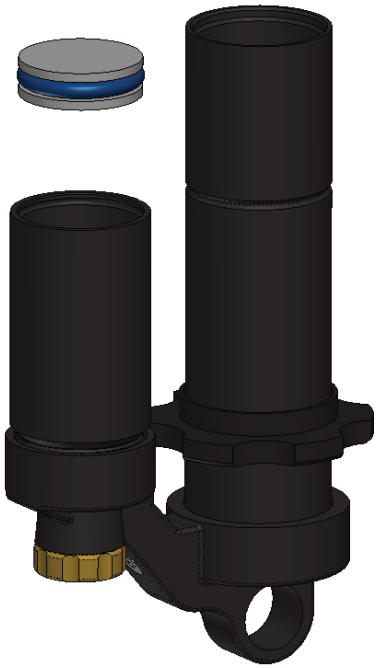

Figure 8. Orientation of shock body and IFP for hand bleeding.

Remove the bleed screw and slowly push on the IFP to eject the air and excess oil out the bleed screw port.

Finish with the shaft fully extended and IFP 36 mm down from the edge of the piggyback tube.

Clean the shock and install the IFP cap with wire retaining clip. Finally torque the seal-head to 40 Nm.

IFP Recharging

There are two methods to recharge the IFP. The stock system uses a hypodermic needle on an air pump or nitrogen bottle. If you're using that you don't need our instructions.

Shockcraft produces a valve system called Faux IFP that converts these shocks to use a standard shock pump to recharge with the shortest possible length (see Figure 9).

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Figure 9. Marzocchi Bomber CR with Shockcraft Faux IFP Valve Stem Kit.

The Faux IFP kit for this shock needs a 4 x 1.5 mm o-ring and a short valve stem. Torque the valve stem to 2 Nm (screwdriver tight). Valve core should be installed so the end is flush.

IFP Pressure

More IFP pressure prevents cavitation and air ingestion but adds to seal friction.

200 psi is ideal for most riders. Heavier riders can run 250 psi, lighter riders can run 150 psi. This is not a tuning variable, it does not affect damping and has only a tiny effect on ride height.

Install the lock-ring collar to the end of the piggyback once it is pressurised.

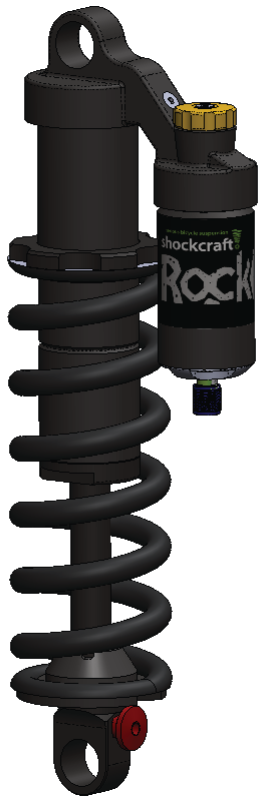


Figure 10. Marzocchi Bomber CR with Shockcraft Rockeater Tuned sticker installed on piggyback.

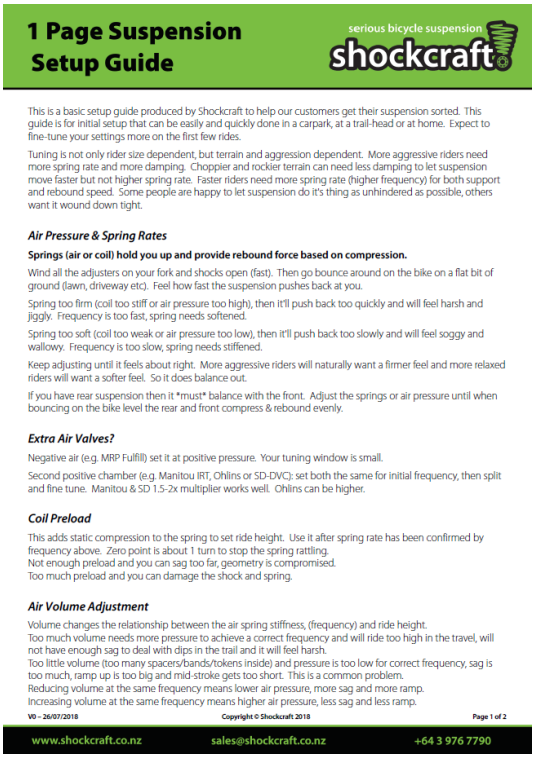
Rockeater Sticker Install

Clean the shock and degrease the piggyback. Install you new Rockeater Tuned sticker (Figure 10) and you're ready to install your newly tuned shock.

Initial Setup

This shock tune has a wide and linear range on both compression and rebound. You have ~20 clicks on each adjuster but it does vary shock to shock. Due to the needle shapes the mid-point is about 8 clicks out from closed on each dial. Medium weight riders start there, heavy riders start with -5 clicks on each. Lightweight riders start near full open on both.

Shockcraft 1 Page Suspension Setup Guide is here.



1 Page Suspension Setup Guide

serious bicycle suspension shockcraft

This is a basic setup guide produced by Shockcraft to help our customers get their suspension sorted. This guide is for initial setup that can be easily and quickly done in a carpark, at a trail-head or at home. Expect to fine-tune your settings more on the first few rides.

Tuning is not only rider size dependent, but terrain and aggression dependent. More aggressive riders need more spring rate and more damping. Choppier and rockier terrain can need less damping to let suspension move faster but not higher spring rate. Faster riders need more spring rate (higher frequency) for both support and rebound speed. Some people are happy to let suspension do it's thing as unhindered as possible, others want it wound down tight.

Air Pressure & Spring Rates

Springs (air or coil) hold you up and provide rebound force based on compression.

Wind all the adjusters on your fork and shocks open (fast). Then go bounce around on the bike on a flat bit of ground (lawn, driveway etc). Feel how fast the suspension pushes back at you.

Spring too firm (coil too stiff or air pressure too high), then it'll push back too quickly and will feel harsh and jiggly. Frequency is too fast, spring needs softened.

Spring too soft (coil too weak or air pressure too low), then it'll push back too slowly and will feel soggy and wallowy. Frequency is too slow, spring needs stiffened.

Keep adjusting until it feels about right. More aggressive riders will naturally want a firmer feel and more relaxed riders will want a softer feel. So it does balance out.

If you have rear suspension then it *must* balance with the front. Adjust the springs or air pressure until when bouncing on the bike level the rear and front compress & rebound evenly.

Extra Air Valves?

Negative air (e.g. MRP Fulfill) set it at positive pressure. Your tuning window is small.

Second positive chamber (e.g. Manitou IRT, Ohlins or SD-DVC): set both the same for initial frequency, then split and fine tune. Manitou & SD 1.5-2x multiplier works well. Ohlins can be higher.

Coil Preload

This adds static compression to the spring to set ride height. Use it after spring rate has been confirmed by frequency above. Zero point is about 1 turn to stop the spring rattling.
Not enough preload and you can sag too far, geometry is compromised.
Too much preload and you can damage the shock and spring.

Air Volume Adjustment

Volume changes the relationship between the air spring stiffness, (frequency) and ride height.
Too much volume needs more pressure to achieve a correct frequency and will ride too high in the travel, will not have enough sag to deal with dips in the trail and it will feel harsh.
Too little volume (too many spacers/bands/tokens inside) and pressure is too low for correct frequency, sag is too much, ramp up is too big and mid-stroke gets too short. This is a common problem.
Reducing volume at the same frequency means lower air pressure, more sag and more ramp.
Increasing volume at the same frequency means higher air pressure, less sag and less ramp.

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