

Understanding Cylinder-to-Barrel Gap and End-Shake in Revolvers: The Role of Cylinder Shims

Quick Synopsis: Fix End-Shake Without Altering Your B/C Gap

Revolvers can develop excessive end-shake—the fore-and-aft play in the cylinder—due to wear from repeated firing, especially with high-power or +P loads. This wear often stems from peening on the cylinder yoke shaft. Installing cylinder shims from TriggerShims.com effectively limits this movement, stabilizing your revolver without changing or increasing the barrel-to-cylinder (B/C) gap. With over 50 different cylinder and yoke shims to fit hundreds of revolver models, all made in America from American stainless steel, TriggerShims.com offers a simple, non-invasive fix that enhances reliability, accuracy, and longevity—perfect for maintaining your firearm’s performance.

The Basics: What is Cylinder-to-Barrel Gap?

The cylinder-to-barrel gap, commonly referred to as the B/C gap, is the small space between the front face of the revolver’s cylinder and the rear of the barrel (known as the forcing cone). This gap is essential for allowing the cylinder to rotate freely during operation. Typically measuring between 0.003 and 0.010 inches, it is a fixed design feature set during manufacturing.

A proper B/C gap balances several factors:

- **Gas Efficiency:** A tighter gap minimizes escaping gases when firing, preserving bullet velocity and energy.
- **Accuracy:** Consistent gaps ensure the bullet transitions smoothly into the barrel, reducing turbulence.
- **Safety:** Too wide a gap can lead to “spitting” of hot gases, powder, or lead particles, while too tight a gap risks binding or drag.

Over time, however, issues like wear can indirectly affect how this gap performs, which brings us to end-shake.

End-Shake: The Hidden Culprit in Revolver Wear

End-shake refers to the axial play or fore-and-aft movement of the cylinder along its yoke (also called the crane) shaft. In a well-maintained revolver, this movement is minimal—often just a few thousandths of an inch—to allow for smooth rotation and heat expansion. But excessive end-shake develops from repeated use and can compromise your revolver’s function.

How End-Shake Develops

One major contributing factor is wear on the cylinder yoke shaft. The shaft, which supports the cylinder, endures constant pounding from recoil forces during firing. This is exacerbated by:

- **High-Power Loads:** Magnum or +P ammunition generates intense pressure and recoil, accelerating wear.
- **Peening Effect:** The shaft end can deform or “peen” over thousands of rounds, creating looseness. This pounding is like a hammer repeatedly striking metal, flattening surfaces and

increasing play.

Other causes include general fouling, poor lubrication, or manufacturing tolerances that loosen with age. As end-shake worsens, the cylinder can shift forward and backward more freely, leading to:

- **Momentary Increase in Effective B/C Gap:** While the fixed gap does not change, excessive play allows the cylinder to shift rearward under recoil, widening the functional gap temporarily during firing. This can cause more gas loss, spitting, or inconsistency—issues that shims address by preventing the shift altogether.
- **Accelerated Wear:** The shifting cylinder can batter the forcing cone or cylinder face, eroding material and potentially enlarging the gap permanently over time.
- **Timing Issues:** Loose cylinders may misalign chambers with the barrel, risking bullet shaving, reduced accuracy, or even safety hazards like out-of-battery firing.

The Relationship Between End-Shake and B/C Gap

End-shake and B/C gap are interconnected but distinct. The B/C gap is a static measurement, but end-shake introduces dynamic movement. Think of it this way:

- **Direct Impact:** Excessive end-shake amplifies wear at the gap interfaces. Under firing, the cylinder can slam forward (battering the forcing cone) or shift rearward (increasing effective gap momentarily), leading to erosion that widens the gap over time.
- **Indirect Effects:** More play means inconsistent bullet alignment, higher gas escape, and reduced velocity—issues often misattributed solely to the gap itself.
- **Headspace Consideration:** Importantly, uncontrolled forward movement from end-shake can temporarily reduce headspace, but attempting to “fix” this by pushing the cylinder forward (e.g., improper shimming) would increase headspace permanently, risking misfires or unsafe cartridge positioning. Proper solutions avoid this.
- **Measurement Tip:** Check end-shake with feeler gauges by measuring cylinder movement with the action closed. If it is over 0.005–0.010 inches (depending on the model), it is time to address it.

Ignoring end-shake can turn a precision revolver into an unreliable one, shortening its service life and affecting shot-to-shot consistency.

How Cylinder Shims Solve the Problem—Without Touching Your B/C Gap

At TriggerShims.com, our cylinder shims are precision-engineered washers designed specifically to eliminate excessive end-shake. We manufacture over 50 different cylinder and yoke shims to fit hundreds of revolver models, all crafted in America from high-quality American stainless steel. Here is the key: Shims limit fore-and-aft cylinder movement without altering or increasing the B/C gap. They achieve this by holding the cylinder in a stable, rearward position, preventing shifts that could cause momentary gap widening or headspace issues.

Why Shims Work

- **Installation Simplicity:** Shims are placed at the front of the cylinder (between it and the yoke/frame) or at the end of the yoke shaft inside the cylinder, filling excess space caused by wear. No machining or permanent modifications are needed—just disassemble, shim, and reassemble.
- **Preserving the Gap and Headspace:** Unlike adjustments that involve the barrel or forcing cone, shims only stabilize axial play. By biasing the cylinder rearward, they prevent forward slamming (reducing wear) and rearward recoil shifts (avoiding temporary gap increases), all while keeping the factory-set B/C gap and headspace intact. This eliminates risks like binding or misfires from over-correction.
- **Benefits:**
 - **Enhanced Reliability:** Reduced play prevents peening and wear, ensuring consistent operation even with hot loads.
 - **Improved Accuracy:** Stable cylinders mean better chamber-to-barrel alignment, minimizing gas loss and bullet destabilization.
 - **Longevity:** By cushioning the yoke shaft from pounding, shims extend the life of critical components.
 - **Compatibility:** Our shims fit hundreds of models, including Smith & Wesson, Ruger, Colt, Taurus, Dan Wesson, and more—check TriggerShims.com for specifics.

Installation Best Practices

1. **Measure First:** Use feeler gauges to confirm end-shake and select the right shim thickness (we offer kits with various sizes, from 0.002 to 0.010 inches).
2. **Clean Thoroughly:** Remove fouling from the yoke and cylinder to ensure a proper fit.
3. **Test Function:** After installation, dry-fire and check for smooth rotation, no binding, and unchanged B/C gap.
4. **Professional Help if Needed:** If you are unsure, consult a gunsmith—our shims are user-friendly, but precision matters.

Remember, shims are not a cure-all for severe damage; if your revolver shows significant peening or erosion, professional repair may be required. But for most wear-related end-shake, TriggerShims.com products provide an affordable, effective solution that maintains your revolver's original specifications.

Final Thoughts: Maintain Your Revolver's Edge

Understanding the interplay between B/C gap and end-shake is crucial for any revolver owner. By addressing end-shake early with our American-made stainless steel cylinder shims, you protect your investment without compromising design integrity. Visit TriggerShims.com today to explore our extensive range of over 50 cylinder and yoke shim kits, designed to fit hundreds of revolver models, and keep your firearm performing like new. Have questions? Drop us a line—we are here to help!