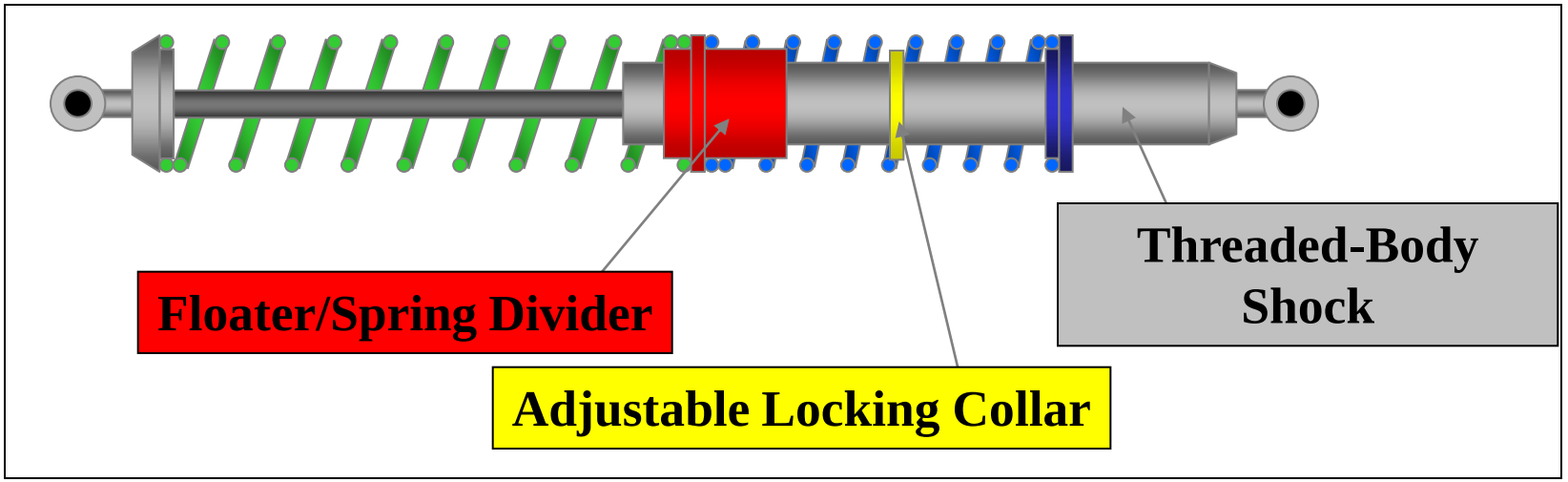
Dual Rate System

- Takes Advantage of Stacking Springs
- Adds Adjustable Lockout Device
- Very Flexible
  - Progressive Rate
  - Digressive Rate
  - Digressive/Progressive

The green spring on the left is always active. The red component is a sliding coupler. Think of it as a two-sided spring perch that is free to float along the shock body. The yellow component is an adjustable locking ring.

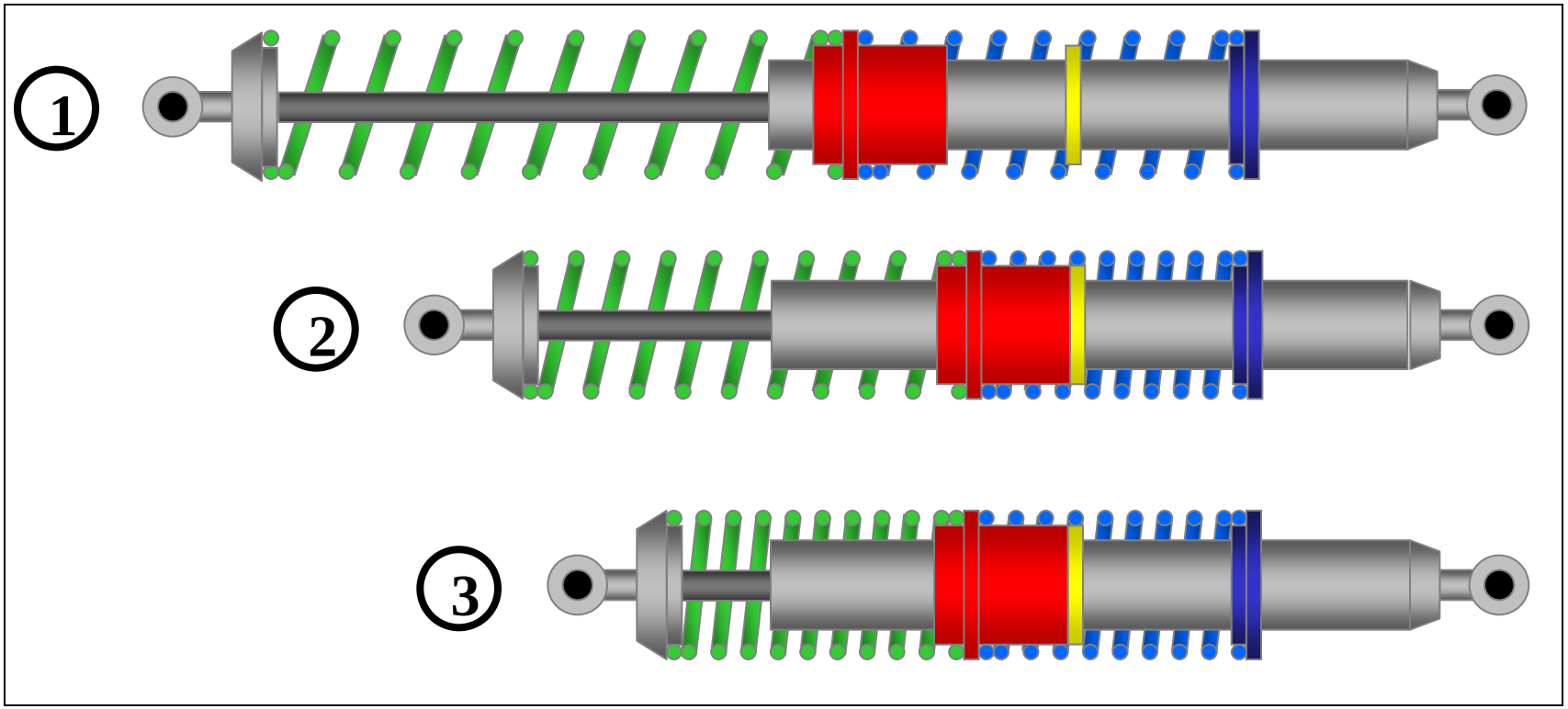


Stacking Springs

- Total Deflection is Shared by Component Springs
- Reduces the Net Spring Rate
- Combined Spring Rate is Lower than Lowest Component Spring Rate

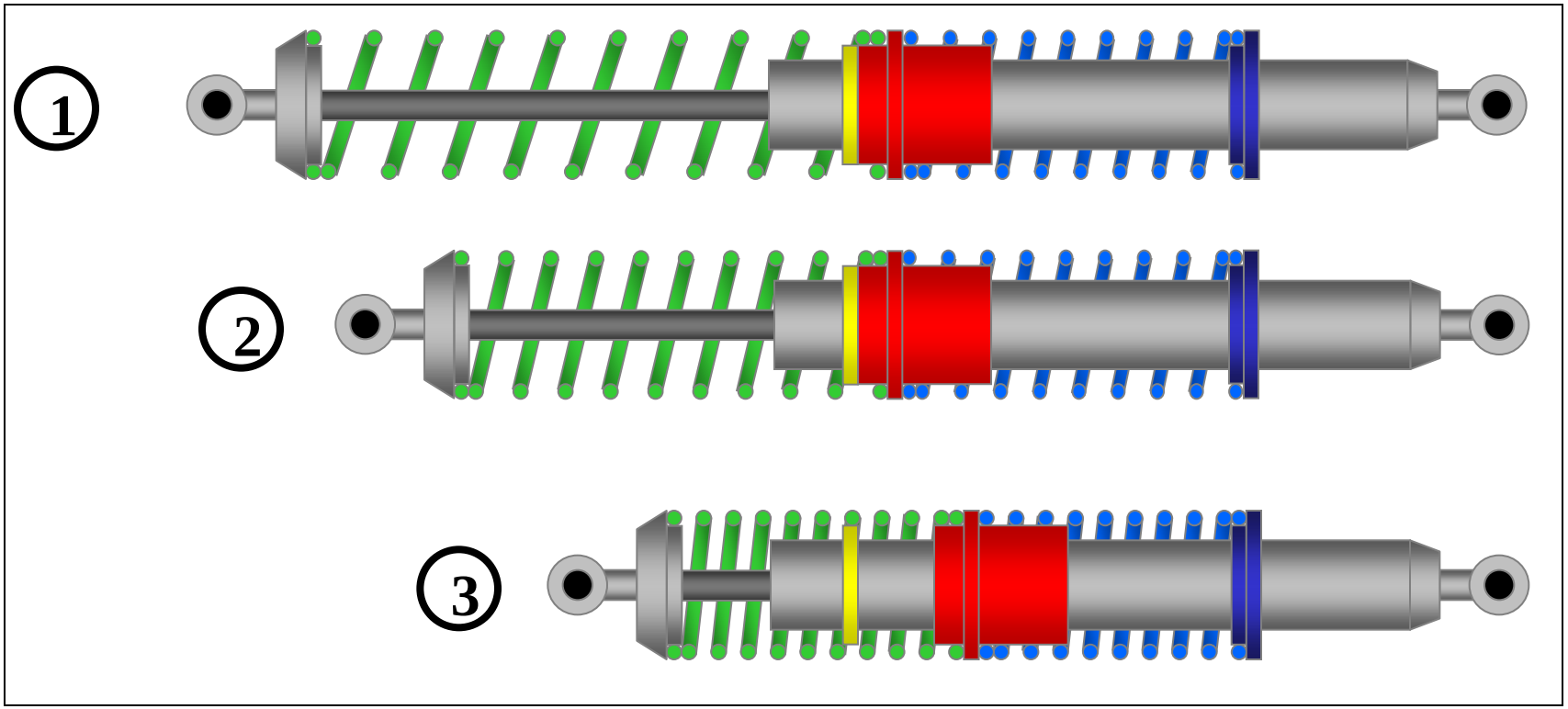
$$k_{eff} = \frac{k_1 \times k_2}{k_1 + k_2}$$

Typical Progressive Setup



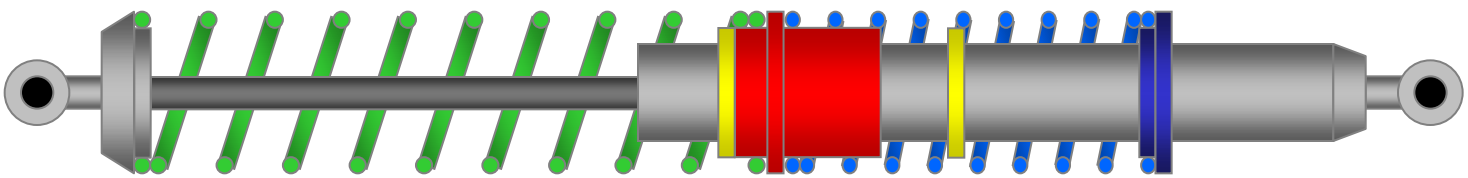
Both springs are active at the initial stages of shock deflection. This would be when the effective spring rate is lowest. As the shock is compressed, load is transferred to both the green and blue springs. As they compress, the red coupler will slide to the right until it makes contact with the yellow locking ring. When that contact is made, any additional shock travel will not compress the blue spring any further. At that point, the effective spring rate increases to the green spring's rate.

Typical Digressive Setup



With the shock fully extended, the yellow locking ring is placed so that the blue spring has a preload on it. The blue spring will not compress any further until the applied load on the green spring reaches the blue spring's preload. So, initially, the spring rate will be the same as the green spring's rate. Once the total load is greater than the blue spring's preload, the red coupler will come off the yellow locking ring and both springs will be active. When this happens, the effective spring rate drops to the combined rate.

What Happens Here?



It works just like the Digressive setup, but there is a second locking ring that limits travel of the red coupler. When the coupler hits the second ring, the overall spring rate increases back up to the green spring's rate.