



#### DAMPER VALVE TUNING GUIDE VT No. 24-0361

- **OIL VISCOSITY** - 15wt Fork Oil is typical. Oil Viscosity (weight) is used to set Rebound Damping. Once the proper Rebound Damping is achieved the Damper can be adjusted for Compression Damping
- **OIL LEVEL** - Common Oil Level is 130 - 160mm (Fork Spring out, chrome tube at the bottom of the stroke, measuring from the top of the oil to the top of the fork tube). Oil Level Tuning Range is 100-180mm in general. The Damping Rod must be covered with oil at full extension. Also, be sure not to exceed the maximum oil level as the fork will run out of compressable air space and it will inhibit full travel.
- **MAIN FORK SPRING PRELOAD** - For Street the most common initial Fork Spring Preload is 15 - 25mm. The Tuning Range for Street is 5-35mm.
- **ADJUSTING THE DAMPER** - To adjust the Damper you must remove it from the fork. This can often be done with the forks still mounted on the bike. If the forks are on the bike make sure the bike is supported with the appropriate bike stand. When you remove the fork springs, use a twisting motion to avoid oil drips. To remove the Damper, use a parts grabber or telescoping magnet. Adjust the Damper Valve Spring Preload a half turn at a time. More Valve Spring Preload will make the forks stiffer.
- **BEFORE INSTALLATION** - be sure the jam nut on the Damper is snug using a socket. Adjust Fork Spring Preload with spacer length or washers. Set the Fork Oil Level with the Fork Springs OUT, Damper IN, Forks bottomed out (chrome tube at bottom of stroke)

#### TUNING VARIABLES

| VARIABLE                | OPTIONAL     | PRIMARY EFFECT   |
|-------------------------|--------------|--|
| Valve Spring Preload *  | 0 - 7 Turns  | Overall firmness, controlling a mushy feel and the speed the front end dives under braking. 2 - 4 Turns initial setting is standard. 1 - 5 turns usable range. |
| Damper                  | 1 - 4 Bleeds | Initial fork movement low speed damping & plushness before valve plate opens   |
| Valve Plate Bleed Holes |              | small bumps, chatter, etc.   |
| Oil Viscosity**         | 5wt - 30wt   | Use oil viscosity to set rebound, this affects traction and stability. Heavier oil equals slower rebound, lighter oil equals quicker rebound.                  |
| Oil Level               | 100-180mm    | Sets Final Firmness in the last 1/3 of Fork Travel   |
| Fork Spring Rate        | .38 - 1.0kg  |  |

\* Measured from zero preload (no tension) on the Valve Spring. To find zero preload back off on the adjuster bolt until the spring is loose then tighten it until the spring just touches.

\*\* Use oil viscosity to set the amount of rebound damping, then adjust the compression with the Damper settings. The Damper does not affect rebound, however oil viscosity does.

## Tuning Details

- The Damper controls Compression Damping as the fork hits the bump. More or less spring tension (preload) makes compression Stiffer or Softer. A Half Turn of Emulator Spring Preload is noticeable, a full turn is significant. Tune in half turn increments until you find the best setting.
- Another tuning variable for low-speed compression damping is the number of bleed holes in the Damper Valve Plate (under the colored valving spring). Damper Plates may have pre-drilled holes in the valve plate. Adding additional holes (up to 4, same size as originals) will add plushness to low speed fork response (small bumps, slow fork movement). This is a good way to address fork chatter issues you may encounter. These holes control oil flow that is too low to open the spring loaded valve plate. **NOTE:** *Bleed holes have little effect on high-speed damping (large bumps, fast fork movement).*
- Oil Viscosity controls Rebound Damping; how quickly the fork extends after the bump. Thicker oil slows fork movement down, thinner oil speeds it up (5/10/15/20/30wt etc). Please note that Suspension Oils are not constant in viscosity between brands! Choose a brand and stay with it to ensure consistent results when making changes! **NOTE:** Oil viscosity should be used for tuning rebound damping. For compression damping, adjust the Damper Valve Spring Preload, Valve Spring Stiffness or number of Bleed Holes.
- Oil Level controls bottoming along with fork stiffness in the last 30% of fork travel. Tune in 10mm increments. Measure the oil level with the Fork Spring out, Damper in, chrome tube at bottom of stroke, top of fork tube down to the top of the oil. **NOTE:** *Tuning fork oil level will only affect the feel in the last 30% of fork travel. Use this variable to address bottoming issues or if not using most, or full, fork travel.*