**Cogent Dynamics Inc.**
**Fork Seal Installation considerations**

Most motorcycle forks utilize specialized polymer seals to allow them to work properly. Generally a pair of seals are used on each fork leg, an oil seal and a "dust" seal or scraper.

The job of the oil seal is to contain the oil within the fork that is used for damping, lubrication or both. The oil seal, being designed specifically for keeping oil **INSIDE** of the fork is not particularly good at keeping dirt, water or other contaminates from the outside world getting into your fork where it can cause havoc. The "Dust" seal or scraper is an additional seal fitted on the outside of the oil seal specifically to help keep these outside contaminates from getting into your fork internals.

When installing fork seals, always install them with the letters and markings towards the outside of the fork. Doing so ensures that the designed lip geometry is oriented properly to let each seal component to do its job in the best way. Seals that are installed up-side-down will almost always leak in short order when put into service.

Typically forks are assembled with the oil seal fitted directly to the outside of the "outer" bushing and a washer is fitted between these two components. The washer should be flat and installed above the bushing with the bushing fully seated into its machined bore. The oil seal is most commonly retained by a spring wire retaining ring that must be in place within the provided groove just outside of the seal. The Dust seal presses into the fork to the outside of the oil seal retaining clip in many cases but some forks utilize the two seals directly sandwiched together with the retaining ring outside of the pair.

When installing seals, it is very important to protect them from dirt and debris from the environment including stuff stuck to the fork tubes and even dirty fingers. The seals need to be protected from sharp edges when slid over the fork tube. Special tools are available for this purpose but even a plastic bag can suffice.

Your seals should be lubricated prior to assembly. We recommend the use of special lubricants suited to this task. Cogent Dynamics recommends that the oil seal be filled to approximately 30-40% full of grease and the dust seal be filled with a special grease to about 90% of fully packed. We do not recommend filling the space between the seals. The special lubrication is needed because the seals need lubrication to work and resist wear. The dust seal particularly, operates in what is often a very dry environment.

We recommend polishing the hard chrome slider prior to installing new seals (assuming the fork is not coated with a performance coating like DLC) and dress any defects on the slider tube. Dressing sharp points such as rock dings is critical so seal longevity. We recommend using a 600 grit flat stone (sometimes known as an "EDM" stone. The surface finish of the seal engagement area on the hard chrome slider is important. Too smooth of a finish can starve the seal lip of lubricants and cause additional friction and heat damaging the seal. Conversely, too coarse of a finish will cause premature seal lip wear. The recommended average roughness is 0.2-0.5 microns (use 240-320 grit abrasive sheet). Besides getting the roughness right, the lay (pattern) of the finish should be angular in both directions or in sort of an "X", roughly a 45 degree angle. We also like to use a light buff of the finish with leather strop or polishing abrasive sheet.

Be sure to use a proper seal driving tool to install your seals straight and true without distorting the metallic inner core.

Use only top quality aftermarket or OEM seals.  Of course, all these items are available from Cogent Dynamics!