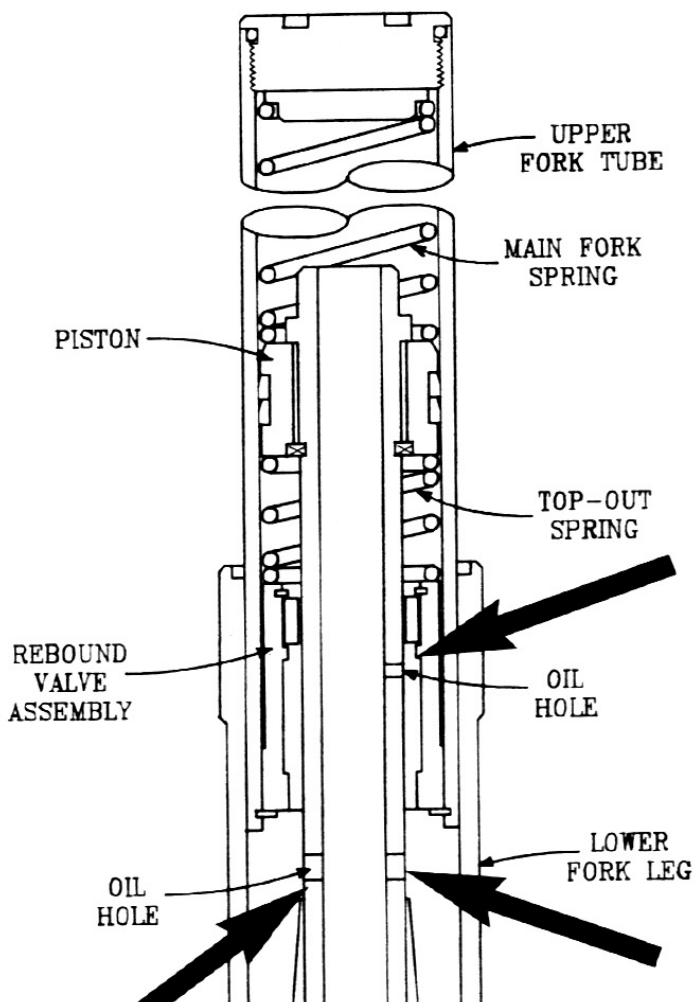


# Front Fork Dynamics

There are many different types of motorcycle forks but the types we most commonly run across use either damper rod technology or are to the cartridge variety. Here are some illustrations to help explain the difference between the two.

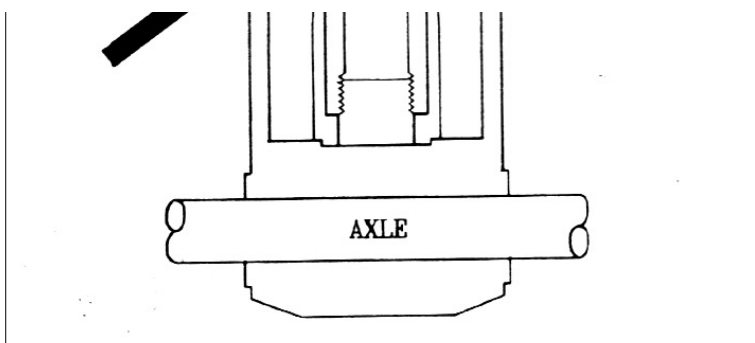
The basic purpose of all forks is to keep the front tire contact patch on the ground and relatively uniform in size for optimum handling. There are two basic styles of forks used on bikes: conventional with the lower legs sliding over the outside of the upper tubing as they go up and down, and inverted, with the lower legs going up and down inside of the upper tubing as they operate. Both damper rod and cartridge type fluid damping systems could be used for both types of forks, but inverted front ends are almost always of the cartridge type.

## DAMPER TUBE SYSTEM



## Damper Rod, or Tube Systems:

This type of fork uses predetermined orifice sizes (pointed out by arrows) in the damper tube to control rebound and compression movement of the fork. They work well and are cheap to produce, but are limited in their adjustment. There are examples with screw-adjustable orifices, but you are still stuck with your final adjustment: one stage for compression and one stage for rebound. Around-town and mild riding are adequate, but hitting a severe bump in the road easily overloads the fork and it can't react fast enough. The front end can't compress fast enough and feels as



though you have solid rods for forks.

The cartridge damping system is a vast improvement over the damper rod and adds what is basically another stage of operation. Much like the different stages a carburetor transitions through as speed and load increase, the cartridge-style fork has an additional high-speed circuit to handle sudden bumps in the road. The cartridge (arrow A) is almost like having a shock within a shock. It not only has the standard oil passages like the damper rod (arrow B), it has the high-speed valve (arrow C) to handle fast compression. When oil is compressed at a rate higher than can be handled by the drilled oil passage, a tuned valve in the high-speed compression valve takes over and bleeds off excessive pressure during fast compression to control fork action.

## CARTRIDGE DAMPING SYSTEM

