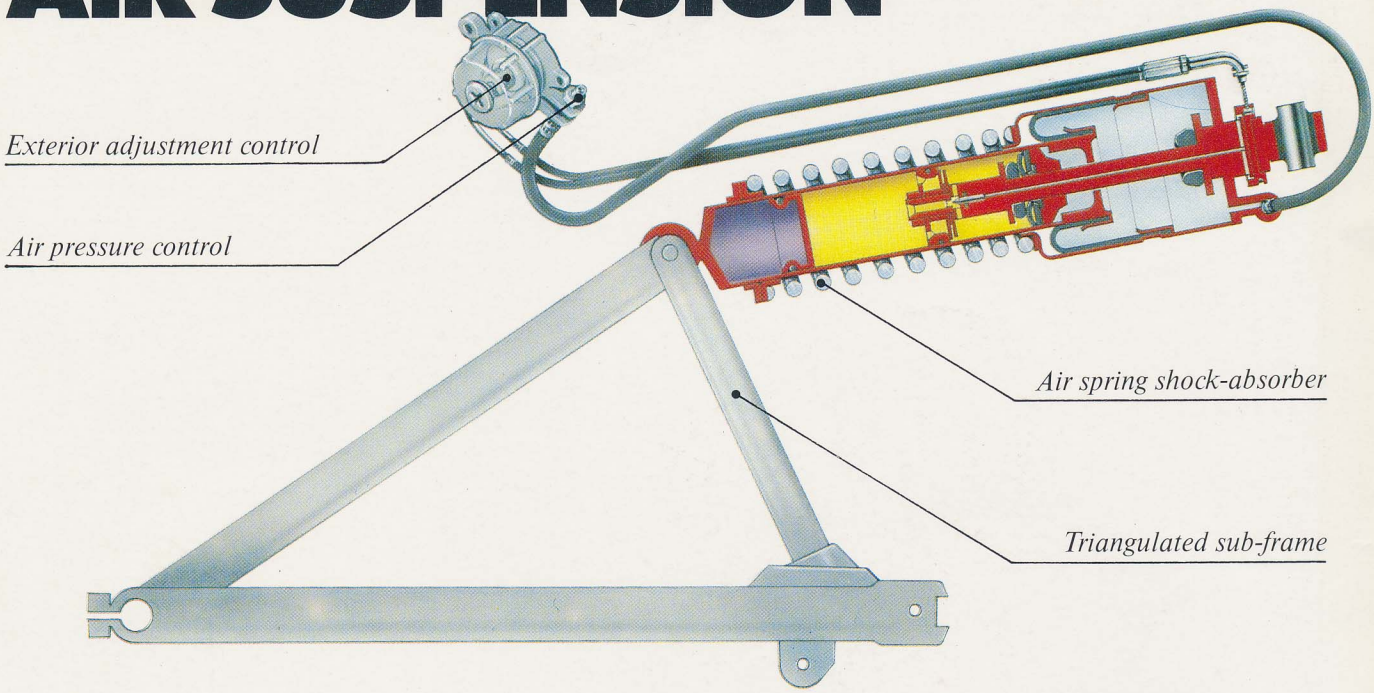
YAMAHA MONOSHOCK AIR SUSPENSION



Yamaha's monoshock suspension was first introduced on its 250cc motocross racers in 1973. Monoshock-equipped machines won their Grand Prix debut, went on to assist Hakan Andersson in winning the World 250cc Motocross Championship that year and, since that time, have been used with great success on dirt, street and even road racing machines. Without a doubt, the Yamaha monoshock system was the most significant advance in motorcycle suspension in almost three decades.

Now Yamaha have taken the monoshock concept a step further with the addition of an air spring to complement the conventional coil spring.

Pressure in the air spring can be easily adjusted to alter the machine's ride height and spring rate, thus giving the individual rider the ability to tune the suspension to his own particular needs.

Tuning the suspension could not be simpler, thanks to another Yamaha innovation for 1981 ... remote suspension adjustment.

Damping can be adjusted by a knob located below the seat on the right side of the machine. Cables connect this adjuster to a damping-adjuster wheel on the top of the monoshock unit. This wheel is, in turn, connected to a tapered magnesium damper rod down the centre of the shock. Turning the wheel moves the tapered rod in or out of an orifice in the shock's damping piston to restrict the flow of damping fluid through the shock as required.

The smaller the orifice, the harder it is for the fluid to move through and the harder the suspension damping becomes ... and vice versa, of course.

The adjuster knob on the outside of the machine allows six different settings literally at the rider's fingertips. Taking things a stage further, the rider can reposition the "remote control" cables into alternative positions on the damping-adjuster wheel. This gives several other six-position settings ... all in all there are 20 combinations of damper settings that are available to the rider!

There is also a reason for making the damper rod out of magnesium ... apart from its obvious light weight.

As a shock absorber heats up due to internal friction during use, the damper fluid thins out and becomes less effective. Magnesium, however, expands more when hot than other metals such as steel. Therefore, as the fluid thins due to heat, so the magnesium expands. It fills the orifice in the piston more because of this heat expansion and this, of course, compensates for the thinning in the damper fluid's viscosity!

The shock's damping performance, therefore, remains consistent over a wide range of operating temperatures.

The air spring that is an addition to the Yamaha monoshock system this year is also fully adjustable from the outside of the machine. An airhose runs next to the damping-adjustment cables and protrudes next to the damper adjustment knob. If the rider wishes to harden the settings for two-up riding or the carrying of a heavy load, he simply pumps up the system to the desired degree.

The spring setting can be softened simply by letting air out of the system.

When a rider has settled on a suitable spring setting for his weight and style of riding, he can simply check the pressure with a normal tyre gauge and note it for future reference.

Almost ten years after its introduction, the Yamaha monoshock suspension system continues to lead the world.