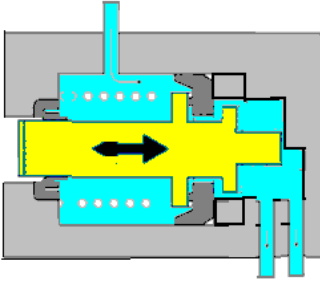
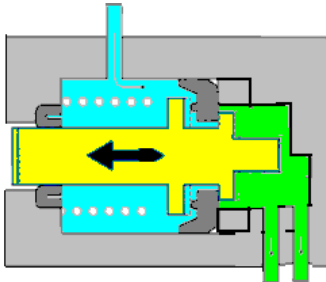


Proportional valve



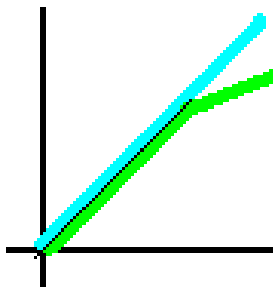
The proportional valve spring is pressing the spool into the cavity. This is causing the seal to unseat itself letting the fluid flow straight through unregulated.

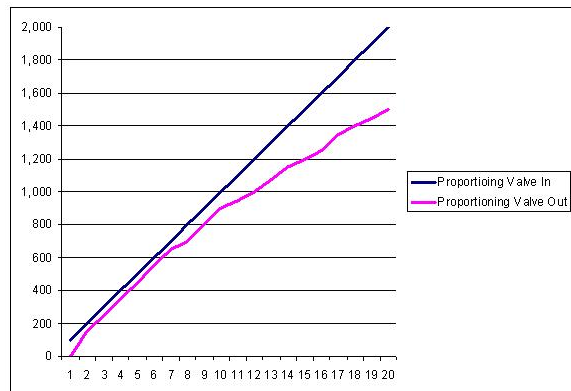
The pressure inside the cavity, Plus the pressure downstream (on the outlet side) are both working together to push the spool back against the spring. If the pressure is great enough, the spool will move, causing the seal to seat against the cavity, sealing off the outlet from any more pressure.



If more pressure continues to come in from the master cylinder, it now acts against the seal and the spool pushing it into the cavity, which will unseat the seal and let some pressure out to the brakes until it's enough to push the spool against the spring again. In this fashion it only lets some of the pressure through the valve.

If you think of it as a balance, You have outlet pressure on one side, working against the cavity diameter trying to push the spool out, and on the other side, you have the spring, and the area between the cavity and the spool pushing back. The math puts these two forces at a ratio, which is the Proportional Valves Ratio. The spring's only function is to cause the proportional valve to stay open until a certain amount of inlet and outlet pressure is reached, then it proportions the outlet pressure by that ratio beyond that point.





(<https://www.musclecarresearch.com>)