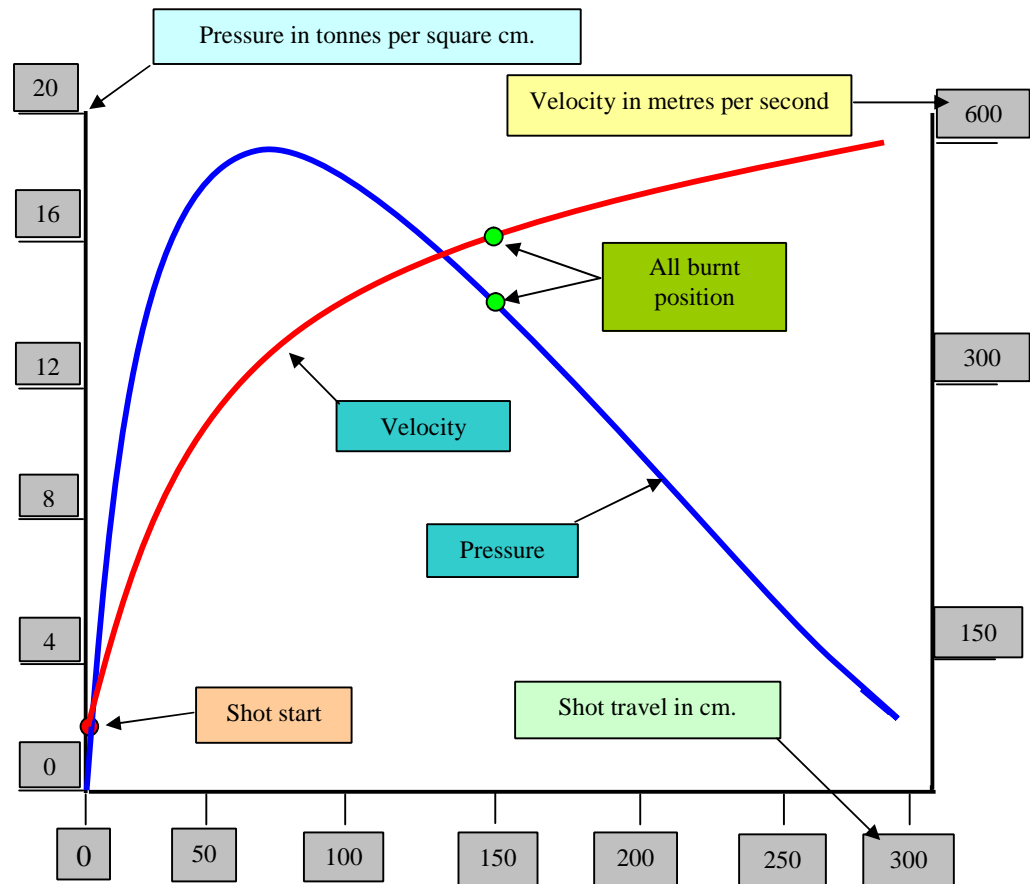


EXPLOSIVES PRESSURE/TIME CURVES

Shown below is a diagrammatic representation of what happens inside an artillery piece when it is fired.



At the moment of firing the projectile is at rest with the driving band partially engaged with the rifling of the bore. As the propellant commences to burn the pressure begins to rise until it is of sufficient value to overcome the resistance provided by the driving band and the rifling. Once the engraving begins the projectile begins to move and in so doing causes the volume behind the projectile to increase. This increase in volume means that the propellant gasses have more room into which to expand. You will see that at shot start pressure the pressure in the bore is almost at its highest value. Very soon after shot start the value has risen to its maximum value and from that point on the pressure begins to fall quite rapidly. At the point of median values of pressure and velocity you will note that here the propellant charge has been all burnt. This point is of great importance as the accuracy of each shot depends on uniformity in it. Variations to the all burnt position give variations in velocity. The arrival of the projectile at the muzzle causes the pressure to drop to the ambient value depending on where you are, and the velocity to its approximate designed value.