Plasma focus devices (PF), through the rapid magnetic compression, can produce a hot, dense and short lived plasma called pinched plasma. The pinched plasma generates beams of ions, electrons, soft and hard X-ray. Using the deuterium, PF devices produce fusion D-D reactions, generating fast neutron pulses.

In a plasma focus device, the efficiency of magnetic field in sweeping the ions during the electrical discharge and pinching plasma is presented by mass shedding factor which is one of the most important pinch parameters.

In this paper, by a semi-experimental study, some of pinch parameters for Dena facility (Filippov type, 90 kJ, 288 F, 25 kV), during 16 kV discharges in deuterium, have been calculated. Assuming the pinch radius between 0.5 and 5 mm, this study has shown that the amount of magnetic field at the moment of pinch takes place between 24 and 400 Tesla. Also using the equation of state of an ideal gas and the experimental pinch parameters have shown that the mass shedding factor should be less than 1%. Using the average fusion cross section and the experimental pinch parameters have shown that the mass shedding factor should be between 0.0016 and 0.016.

2. M.A. Tafreshi et al., "Dena, a new PF device", Nukleonika, Vol. 46 (Supplement 1), S85-87, 2001

* All of the obtained results have shown by their spesific 2 and 3 dimensional figures in the full paper.