Types of black powders used: All of them are very similar, main difference is the grain size, which effects burn timing.

* FFFFg (4Fg)
  + Very fine grain
  + Burns very fast
  + Used for small ejection charges on smaller model rockets
  + Very sensitive to ignition, so needs to be handled properly
* FFFg (3Fg)
  + Less fine grain
  + Burns slightly slower than 4Fg
  + Often used for a more controlled ejection to reduce overpressurization
  + Used on mid-sized rockets
* FFg (2Fg)
  + Larger grain
  + Burns slow
  + Used in large ejection wells

Most of the class A-F solid rocket motors use 4Fg black powder for their ejection charges, so I will stick with that for parachute deployment.

The calculation for the amount of black powder needed is fairly simple as it is just the ideal gas law:



Where:

* pressure can be changed to Force/Area
  + Where required force is an estimated value that changes with the mass of the nose cone and parachute, as well as how tight of a fit the nose cone has with the body tube
  + Area is the area of the body tube (\*\*not the area of the canister containing the black powder\*\*)
* Volume is the volume between the piston plate and the upper bulkhead.
* N is the molecular weight, which we can derive the mass of black powder from
* R is the gas constant of the combustion gases (266 lbf\*in/lbm for 4Fg black powder)
* T is the temperature of the combustion gases (3307 R for 4Fg black powder)