The DRIFT Source: A Modular Negative Ion Source for DC Multi-Amperes Ion Beams, G. DELOGU, C. DESGRANGES, M. FUMELLI, A. SIMONIN, Association EURATOM-CEA CEA/Cadarache, France - The large size of present Tokamaks, requires high neutral atom beam energies (300-1000 keV) and powers (10-50 MW) for heating. To meet these objectives, development of large size multi-amperes dc negative ion sources has been underway in several laboratories. At Cadarache, we are developing a new concept of multi-amperes negative ion source which is based on the juxtaposition of several small dimension (20 x 13 x 16 cm^3) negative ion sources, called DRIFT sources. This concept of modularity has several advantages; the most important being the possibility of producing intense and uniform negative ion beams (several tens of A) from any size (up to several m^2) and shape of extraction surface. The particular magnetic field topology of the DRIFT source yields to high plasma confinement, which consequently gives rise to low operating source pressure (from 1 to 1.5 mTorr), and high plasma stability for high discharge powers. We describe on this paper the particular features of the DRIFT source, and the first experimental results. Up to now, a D^- current density of 5.3 mA/cm^2 (on 75 cm^2 of extraction surface) has been reached in pure volume ion production, and 20 mA/cm^2 with Cesium seeding at a source pressure of 1.5 mTorr.