Abstract. Given $a \in \mathbb{Z} \setminus \{\pm 1, 0\}$, we consider the problem of enumerating the integers m coprime to a such that the order of a modulo m is square free. This question is raised in analogy to a result recently proved jointly with F. Saidak and I. Shparlinski where square free values of the Carmichael function are studied. The technique is the one of Hooley that uses the Chebotarev Density Theorem to enumerate primes for which the index $i_p(a)$ of a modulo p is divisible by a given integer.