Abstract We show that, for each orientable surface Σ, there is a constant c_Σ so that, if G_1 and G_2 are embedded simultaneously in the orientable surface Σ, with representativities r_1 and r_2, respectively, then the minimum number $cr(G_1, G_2)$ of crossings between the two maps satisfies

$$cr(G_1, G_2) \leq \frac{c_\Sigma}{r_1 r_2} |E(G_1)||E(G_2)| \ .$$

This refines earlier estimates by Negami. Furthermore, we provide a counterexample to a conjecture of Archdeacon and Bonnington by exhibiting, for each k, embeddings G_1 and G_2 in the double torus so that, if we force all the vertices of G_1 to be in the same face of G_2, then the number of crossings between G_1 and G_2 is at least $k \cdot cr(G_1, G_2)$.