If the minimum s-t cut has size $\leq k$, then we can reduce the flow to 0. Otherwise, let $f > k$ be the value of the maximum s-t flow. We identify a minimum s-t cut (A, B), and delete k of the edges out of A. The resulting subgraph has a maximum flow value of at most $f - k$.

But we claim that for any set of edges F of size k, the subgraph $G' = (V, E - F)$ has an s-t flow of value at least $f - k$. Indeed, consider any cut (A, B) of G'. There are at least f edges out of A in G, and at most k have been deleted, so there are at least $f - k$ edges out of A in G'. Thus, the minimum cut in G' has value at least $f - k$, and so there is a flow of at least this value.

[1] ex225.750.725