An example of an endoscopy group.

Let $G = Sp(2n)$, then $\hat{G} = SO(2n+1)$.

Take $x = \begin{pmatrix} 1 & & & 0 \\ & -1 & & \\ & & -1 & \\ 0 & & & \ddots \; -1 \end{pmatrix} \in \hat{G}$. The centralizer of x is isomorphic to $O(2n)$, so its neutral connected component, $\hat{H}$, is isomorphic to $SO(2n)$.

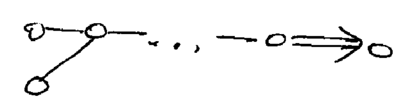
Let H be the dual of $\hat{H}$, then $H \simeq SO(2n)$.

Conclusion. $SO(2n)$ is an endoscopy group for $Sp(2n)$.

Remarks. (i) $SO(2n)$ cannot be embedded into $Sp(2n)$. Moreover, for $n \geq 4$ the Lie algebra of $SO(2n)$ cannot be embedded into the Lie algebra of $Sp(2n)$.

(ii) The Dynkin diagram of G is 

The Dynkin diagram of $\hat{G}$ is 

The extended Dynkin diagram of $\hat{G}$ is 

The Dynkin diagram of $\hat{H}$ is