$$\operatorname{ru}_{V^*}^{-1} \circ (\operatorname{Id}_{V^*} \otimes \eta_V) \circ \operatorname{as}_{V^*,V,V^*}^{-1} \circ (\epsilon_V \otimes \operatorname{Id}_{V^*}) \circ \operatorname{lu}_{V^*} = \operatorname{Id}_{V^*}$$