

$$\mathbb{1}^\# \xleftarrow{\pi} \mathbb{1}^\# \otimes_{\mathbb{K}}^{\mathbb{H}} \mathbb{K}$$

$$\mathbb{1}^\# \mathbb{1} = \mathbb{1}_\alpha \otimes S \mathbb{1}^\alpha$$

$$\begin{array}{ccc}
 \mathbb{1}^\# \otimes_{\mathbb{K}}^{\mathbb{H}} \mathbb{K} & \xleftarrow{\mathbb{1}^\#} & \mathbb{1}^\# \\
 \downarrow \otimes S & & \downarrow \otimes \\
 \mathbb{1}^\# \otimes_{\mathbb{K}}^{\mathbb{H}} \mathbb{K} & \xleftarrow{\pi} & \mathbb{1}^\#
 \end{array}$$