

$$\begin{array}{ccc}
X_m \otimes X_n & \xrightarrow{\sim} & X_m \otimes (I \otimes \cdots \otimes \overset{k\text{-th factor}}{\overline{X_n}} \otimes \cdots \otimes I) \\
\downarrow \scriptstyle \circ_k & & \downarrow \scriptstyle 1_{X_m} \otimes \eta \otimes \cdots \otimes 1_{X_n} \otimes \cdots \otimes \eta \\
X_{n+m-1} & \xleftarrow{\mu_{1,\dots,1,n,1,\dots,1}} & X_m \otimes X_1 \otimes \cdots \otimes X_n \otimes \cdots \otimes X_1
\end{array}$$