

$$\begin{array}{ccccc}
A \otimes^{\mathbf{L}} (A \otimes^{\mathbf{L}} X) & \xrightarrow{A \otimes^{\mathbf{L}} (l^{\rho}_{A \otimes^{\mathbf{L}} X})} & A \otimes^{\mathbf{L}} X & \xrightarrow{l^{\rho}_X} & X \\
\alpha^{\rho} \downarrow & & & & \parallel \\
(A \otimes^{\mathbf{L}} A) \otimes^{\mathbf{L}} X & \xrightarrow{(l^{\rho}_{A \otimes^{\mathbf{L}} A}) \otimes^{\mathbf{L}} X} & A \otimes^{\mathbf{L}} X & \xrightarrow{l^{\rho}_X} & X
\end{array}$$