$$\begin{CD}
\big(F(X) \otimes_{\mathbf{D}} F(Y)\big) \otimes_{\mathbf{D}} F(Z) @>{\mathrm{as}^{\mathbf{D}}_{F(X),F(Y),F(Z)}}>> F(X) \otimes_{\mathbf{D}} \big(F(Y) \otimes_{\mathbf{D}} F(Z)\big) \\
@VVV @VVV \\
F(X \otimes_{\mathbf{C}} Y) \otimes_{\mathbf{D}} F(Z) @. F(X) \otimes_{\mathbf{D}} F(Y \otimes_{\mathbf{C}} Z) \\
@VVV @VVV \\
F((X \otimes_{\mathbf{C}} Y) \otimes_{\mathbf{C}} Z) @>{F(\mathrm{as}^{\mathbf{C}}_{X,Y,Z})}>> F(X \otimes_{\mathbf{C}} (Y \otimes_{\mathbf{C}} Z))
\end{CD}$$