$$\begin{array}{c|c}
\mathbf{C}_1 & \xrightarrow{\mathbf{MonCat}} & \mathbf{D}_1 \\
\hline
\mathbf{MonCat} & & \mathbf{C}_2
\end{array}$$

$$\begin{array}{c|c}
\mathbf{MonCat} & & \mathbf{G} \\
\mathbf{MonCat} & & \mathbf{D}_2
\end{array}$$