$$
\begin{array}{ccc}
S[t^{-1}] & \xrightarrow{\qquad\varphi\qquad} & S[tt'^{-1}] \\
\Big\downarrow{\scriptstyle \mathcal{F}} & & \Big\downarrow{\scriptstyle \mathcal{F}} \\
S[U^{-1}] \otimes_{S[t^{-1}]} \Omega_{S[t^{-1}]/R} & \xrightarrow{1\otimes D\varphi} & S[U^{-1}] \otimes_{S[t^{-1}]} \left(S[t^{-1}] \otimes_{S[t^{-1}]} \Omega_{S[tt'^{-1}]/R}\right) \\
 & & \Big\downarrow{\scriptstyle g} \\
\Big\downarrow{\scriptstyle \delta_t} & & S[U^{-1}] \otimes_{S[tt'^{-1}]} \Omega_{S[tt'^{-1}]/R} \\
 & & \Big\downarrow{\scriptstyle \delta_{tt'}} \\
S[U^{-1}] \otimes_{S[t^{-1}]} \Omega_{S/R}[t^{-1}] & \xrightarrow{\qquad\phi\qquad} & S[U^{-1}] \otimes_{S[tt'^{-1}]} \Omega_{S/R}[tt'^{-1}]
\end{array}
$$

$$
\begin{array}{ccc}
(\frac{s}{t})_t & \xrightarrow{\qquad\varphi\qquad} & (\frac{st'}{tt'})_{tt'} \\
\Big\downarrow{\scriptstyle d_{S[t^{-1}]}} & & \Big\downarrow{\scriptstyle d_{S[tt'^{-1}]}} \\
1 \otimes ((\frac{1}{t})_t d_{S[t^{-1}]}((\frac{s}{1})_t) + (\frac{s}{1})_t d_{S[t^{-1}]}((\frac{1}{t})_t)) & \xrightarrow{f\circ(1\otimes D\varphi)} & 1 \otimes ((\frac{1}{tt'})_{tt'} d_{S[tt'^{-1}]}((\frac{st'}{1})_{tt'}) + (\frac{st'}{1})_{tt'} d_{S[tt'^{-1}]}((\frac{1}{tt'})_{tt'})) \\
\Big\downarrow{\scriptstyle \delta_t} & & \Big\downarrow{\scriptstyle \delta_{tt'}} \\
1 \otimes ((\frac{d_S(s)}{t})_t - (\frac{s d_S(t)}{t^2})_t) & \xrightarrow{\qquad\phi\qquad} & 1 \otimes ((\frac{t' d_S(s)}{tt'})_{tt'} - (\frac{st' d_S(t)}{(tt')^2})_{tt'})
\end{array}
$$