$$\pi(U)$$

$$\pi(U \cap V) \xrightarrow{\varphi_1} \quad \xrightarrow{\rho_1}$$

$$\pi(U \cap V) \xrightarrow{\rho_3} H$$

$$\xrightarrow{\varphi_2} \quad \xrightarrow{\rho_2}$$

$$\pi(V)$$