PROOF.

$$\langle(\mathsf{FCD})(g\circ f)\rangle^* X = \bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle H\rangle^* X}{H\in\mathrm{GR}(g\circ f)}\right\} = \bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle H\rangle^* X}{H\in\mathrm{GR}\bigsqcap\left\{\frac{\uparrow^{\mathsf{RLD}}(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\}}\right\}.$$

Obviously

$$\bigsqcap\left\{\frac{\uparrow^{\mathsf{RLD}}(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\} = \bigsqcap\langle\uparrow^{\mathsf{RLD}}\rangle^*\,\mathrm{xyGR}\bigsqcap\left\{\frac{\uparrow^{\mathsf{RLD}}(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\};$$

from this by lemma 802 (taking into account that

$$\left\{\frac{(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\}$$

and

$$\mathrm{xyGR}\bigsqcap\left\{\frac{\uparrow^{\mathsf{RLD}}(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\}$$

are filter bases)

$$\bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle H\rangle^* X}{H\in\mathrm{GR}\bigsqcap\left\{\frac{\uparrow^{\mathsf{RLD}}(G\circ F)}{F\in\mathrm{xyGR}\, f, G\in\mathrm{xyGR}\, g}\right\}}\right\} = \left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle G\circ F\rangle^* X}{F\in\mathrm{GR}\, f, G\in\mathrm{GR}\, g}\right\}.$$

On the other side

$$\langle((\mathsf{FCD})g)\circ((\mathsf{FCD})f)\rangle^* X = \langle(\mathsf{FCD})g\rangle\langle(\mathsf{FCD})f\rangle^* X = \langle(\mathsf{FCD})g\rangle\bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\} = \bigsqcap\left\{\frac{\langle\uparrow^{\mathsf{FCD}} G\rangle\bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}}{G\in\mathrm{xyGR}\, g}\right\}.$$

Let's prove that $\left\{\frac{\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}$ is a filter base. If $A, B\in\left\{\frac{\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}$ then $A = \langle F_1\rangle^* X$, $B = \langle F_2\rangle^* X$ where $F_1, F_2\in\mathrm{xyGR}\, f$. $A\cap B\supseteq\langle F_1\sqcap F_2\rangle^* X\in\left\{\frac{\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}$. So $\left\{\frac{\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}$ is really a filter base.

By theorem 599 we have

$$\langle\uparrow^{\mathsf{FCD}} G\rangle\bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\} = \bigsqcap\left\{\frac{\uparrow^{\mathrm{Dst}\, g}\langle G\rangle^*\langle F\rangle^* X}{F\in\mathrm{xyGR}\, f}\right\}.$$