Equivalent FOL Forms

Each quantificational form in English can be translated into FOL in a variety of equivalent ways. The table below lists some of these equivalent FOL translations for some common quantificational forms in English.

	ENGLISH	FOL
A	All *F*'s are *G*'s.	$\forall x(F(x) \rightarrow G(x))$ $\neg\exists x(F(x) \wedge \neg G(x))$ $\forall x(\neg G(x) \rightarrow \neg F(x))$ $\forall x(\neg F(x) \vee G(x))$
I	Some *F*'s are *G*'s.	$\exists x(F(x) \wedge G(x))$ $\exists x(G(x) \wedge F(x))$ $\neg\forall x(F(x) \rightarrow \neg G(x))$
E	No *F's* are *G*'s.	$\forall x(F(x) \rightarrow \neg G(x))$ $\neg\exists x(F(x) \wedge G(x))$ $\forall x(G(x) \rightarrow \neg F(x))$
O	Some *F*'s are not *G*'s.	$\exists x(F(x) \wedge \neg G(x))$ $\exists x(\neg G(x) \wedge F(x))$ $\neg\forall x(F(x) \rightarrow G(x))$
	All and only *F*'s are *G*'s.	$\forall x(F(x) \leftrightarrow G(x))$ $\forall x(G(x) \leftrightarrow F(x))$
	All things except *F*'s are *G*'s.	$\forall x(F(x) \leftrightarrow \neg G(x))$ $\forall x(\neg F(x) \leftrightarrow G(x))$