I try to prove that $\neg P \vee Q, P \vee \neg Q \vdash P \leftrightarrow Q$.

The first premiss is $\neg P \vee Q$. I try to apply $\vee$Elim.

$\neg P \vee Q$

So I assume $\neg P$ and Q.

$\neg P$

$\neg P \vee Q$

Q

I want to prove Q from P. Combining this with a proof of P from Q will allow me to prove the conclusion. To derive Q from P I assume P.

$\neg P$ $\quad$ P

$\neg P \vee Q$ $\quad$ Q

I apply ¬Elim to $\neg Q$, which has not been assumed. This gives Q.

$$\neg P \vee Q \qquad \dfrac{\neg P \qquad\qquad P}{Q} \qquad\qquad Q$$

Now I can apply $\vee$Elim and discharge the assumptions $\neg P$ and Q.

$$\dfrac{\neg P \vee Q \qquad \dfrac{[\neg P] \qquad P}{Q} \qquad [Q]}{Q}$$

To prove P from Q I proceed in an analogous way.

$$\frac{\neg P \vee Q \qquad \dfrac{[\neg P] \qquad P}{Q} \qquad [Q]}{Q}$$

$$\frac{P \vee \neg Q \qquad [P] \qquad \dfrac{[\neg Q] \qquad Q}{P}}{P}$$

Now I can apply $\leftrightarrow$Intro and discharge P in the proof on the left and Q in the proof on the right.

$$\dfrac{\dfrac{\neg P \lor Q \qquad \dfrac{[\neg P] \qquad [P]}{Q} \qquad [Q]}{Q} \qquad \dfrac{P \lor \neg Q \qquad [P] \qquad \dfrac{[\neg Q] \qquad [Q]}{P}}{P}}{P \leftrightarrow Q}$$