$$H^{+} = -\frac{1}{\sqrt{4c_{W}^{2}-1}} t_{W} \left(1 - 2c_{\beta}^{2} c_{W}^{2}\right) g^{2}$$

$$H^{-} = -\frac{1}{\sqrt{4c_{W}^{2}-1}} t_{W} \left(1 - 2c_{\beta}^{2} c_{W}^{2}\right) g^{2}$$