

Fields in the vertex	Variational derivative of Lagrangian by fields
$A_\mu \quad A_\nu$	$-\frac{1}{4} \frac{1}{M_\rho^2} (4M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - 4M_\rho^2 \cdot p_1^\mu p_1^\nu + e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\mu p_1^\nu)$
$A_\mu \quad Z_\nu$	$-\frac{1}{4} \frac{c_w \cdot e^2 \cdot a^2 \cdot vv^2}{M_\rho^2 \cdot s_w} (p_1^\rho p_1^\rho g^{\mu\nu} - p_1^\mu p_1^\nu)$
$\bar{b}_{ap} \quad b_{bq}$	$-\delta_{pq} (p_1^\mu \gamma_{ab}^\mu + M_b \cdot \delta_{ab})$
$\bar{c}_{ap} \quad c_{bq}$	$-\delta_{pq} (p_1^\mu \gamma_{ab}^\mu + M_c \cdot \delta_{ab})$
$\bar{d}_{ap} \quad d_{bq}$	$-\delta_{pq} (p_1^\mu \gamma_{ab}^\mu + M_d \cdot \delta_{ab})$
$\bar{e}_a \quad e_b$	$-p_1^\mu \gamma_{ac}^\mu \delta_{cb}$
$\bar{\mu}_a \quad \mu_b$	$-(p_1^\mu \gamma_{ab}^\mu + M_\mu \cdot \delta_{ab})$
$\bar{\tau}_a \quad \tau_b$	$-(p_1^\mu \gamma_{ab}^\mu + M_{\tau} \cdot \delta_{ab})$
$G_{\mu p} \quad G_{\nu q}$	$-p_1^\rho p_1^\rho g^{\mu\nu} \delta_{pq}$
$H \quad H$	$-(M_H^2 - p_1^\mu p_1^\mu)$
$\bar{\nu}_a^e \quad \nu_b^e$	$-p_1^\mu \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\mu \quad \nu_b^\mu$	$-p_1^\mu \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\tau \quad \nu_b^\tau$	$-p_1^\mu \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\rho^+_\mu \quad \rho^-_\nu$	$-\frac{1}{16} \frac{1}{M_\rho^2 \cdot s_w^4} (4e^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - 4e^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot p_1^\mu p_1^\nu$ $-e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\nu} - 8e^2 \cdot M_\rho^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} + 16M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu}$ $-32c_w^2 \cdot M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} + 16c_w^4 \cdot M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - 16M_\rho^2 \cdot p_1^\mu p_1^\nu + 32c_w^2 \cdot M_\rho^2 \cdot p_1^\mu p_1^\nu$ $-16c_w^4 \cdot M_\rho^2 \cdot p_1^\mu p_1^\nu - 16M_\rho^4 \cdot g^{\mu\nu} + 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\nu} - 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\nu}$ $-4e^2 \cdot M_W^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu})$
$\rho^+_\mu \quad W^-_\nu$	$-\frac{1}{2} \frac{e \cdot M_W^2 \cdot a \cdot vv}{M_\rho \cdot s_w} \cdot g^{\mu\nu}$
$\rho^-_\mu \quad W^+_\nu$	$-\frac{1}{2} \frac{e \cdot M_W^2 \cdot a \cdot vv}{M_\rho \cdot s_w} \cdot g^{\mu\nu}$
$\rho^0_\mu \quad \rho^0_\nu$	$-\frac{1}{16} \frac{1}{M_\rho^2 \cdot s_w^4} (4e^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - 4e^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot p_1^\mu p_1^\nu$ $-e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\nu} - 8e^2 \cdot M_\rho^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} + 16M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu}$ $-32c_w^2 \cdot M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} + 16c_w^4 \cdot M_\rho^2 \cdot p_1^\rho p_1^\rho g^{\mu\nu} - 16M_\rho^2 \cdot p_1^\mu p_1^\nu + 32c_w^2 \cdot M_\rho^2 \cdot p_1^\mu p_1^\nu$ $-16c_w^4 \cdot M_\rho^2 \cdot p_1^\mu p_1^\nu - 16M_\rho^4 \cdot g^{\mu\nu} + 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\nu} - 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\nu}$ $-4e^2 \cdot M_W^2 \cdot s_w^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu})$

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$\rho^0_{\mu} \quad Z_{\nu}$	$-\frac{1}{2} \frac{e \cdot M_W^2 \cdot a \cdot v v}{c_w \cdot M_{\rho} \cdot s_w} \cdot g^{\mu\nu}$
$\bar{s}_{ap} \quad s_{bq}$	$-\delta_{pq}(p_1^{\mu} \gamma_{ab}^{\mu} + M_s \cdot \delta_{ab})$
$\bar{t}_{ap} \quad t_{bq}$	$-\delta_{pq}(p_1^{\mu} \gamma_{ab}^{\mu} + M_t \cdot \delta_{ab})$
$\bar{u}_{ap} \quad u_{bq}$	$-\delta_{pq}(p_1^{\mu} \gamma_{ab}^{\mu} + M_u \cdot \delta_{ab})$
$W^+_{\mu} \quad W^-_{\nu}$	$-\frac{1}{4} \frac{1}{M_{\rho}^2 \cdot s_w^2} (4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\rho} p_1^{\rho} g^{\mu\nu} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\mu} p_1^{\nu} + e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\rho} p_1^{\rho} g^{\mu\nu} - e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\mu} p_1^{\nu} - 4M_{\rho}^2 \cdot M_W^2 \cdot s_w^2 \cdot g^{\mu\nu})$
$Z_{\mu} \quad Z_{\nu}$	$-\frac{1}{4} \frac{1}{s_w^2 \cdot c_w^2 \cdot M_{\rho}^2} (4c_w^2 \cdot M_{\rho}^2 \cdot p_1^{\rho} p_1^{\rho} g^{\mu\nu} - 4c_w^4 \cdot M_{\rho}^2 \cdot p_1^{\rho} p_1^{\rho} g^{\mu\nu} - 4c_w^2 \cdot M_{\rho}^2 \cdot p_1^{\mu} p_1^{\nu} + 4c_w^4 \cdot M_{\rho}^2 \cdot p_1^{\mu} p_1^{\nu} + c_w^4 \cdot e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\rho} p_1^{\rho} g^{\mu\nu} - c_w^4 \cdot e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\mu} p_1^{\nu} - 4M_{\rho}^2 \cdot M_W^2 \cdot s_w^2 \cdot g^{\mu\nu})$
$\tilde{h}^+ \quad \tilde{h}^-$	$\frac{1}{e^2} (e^2 \cdot p_1^{\mu} p_1^{\mu} + e^2 m d 2 - 2M_W^2 s_w^2 \lambda_3)$
$\tilde{h}_1 \quad \tilde{h}_1$	$\frac{1}{e^2} (e^2 \cdot p_1^{\mu} p_1^{\mu} + e^2 m d 2 - 2M_W^2 s_w^2 \lambda_3 - 2M_W^2 s_w^2 \lambda_4 - 2M_W^2 s_w^2 \lambda_5)$
$\tilde{h}_2 \quad \tilde{h}_2$	$\frac{1}{e^2} (e^2 \cdot p_1^{\mu} p_1^{\mu} + e^2 m d 2 - 2M_W^2 s_w^2 \lambda_3 - 2M_W^2 s_w^2 \lambda_4 + 2M_W^2 s_w^2 \lambda_5)$
$A_{\mu} \quad \rho^+_{\nu} \quad \rho^-_{\rho}$	$-\frac{1}{4} \frac{e}{M_{\rho}^2 \cdot s_w^2} (e^2 \cdot a^2 \cdot v v^2 \cdot p_2^{\rho} g^{\mu\nu} - e^2 \cdot a^2 \cdot v v^2 \cdot p_2^{\mu} g^{\nu\rho} - e^2 \cdot a^2 \cdot v v^2 \cdot p_3^{\nu} g^{\mu\rho} + e^2 \cdot a^2 \cdot v v^2 \cdot p_3^{\mu} g^{\nu\rho} + e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\rho} g^{\mu\nu} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\rho} g^{\mu\nu} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\mu} g^{\nu\rho} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\nu} g^{\mu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\mu} g^{\nu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\nu} g^{\mu\rho} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\rho} g^{\mu\nu})$
$A_{\mu} \quad W^+_{\nu} \quad W^-_{\rho}$	$-\frac{1}{4} \frac{e}{M_{\rho}^2 \cdot s_w^2} (4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\rho} g^{\mu\nu} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\mu} g^{\nu\rho} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\nu} g^{\mu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\mu} g^{\nu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\rho} g^{\mu\nu} + e^2 \cdot a^2 \cdot v v^2 \cdot p_2^{\rho} g^{\mu\nu} - e^2 \cdot a^2 \cdot v v^2 \cdot p_2^{\mu} g^{\nu\rho} - e^2 \cdot a^2 \cdot v v^2 \cdot p_3^{\nu} g^{\mu\rho} + e^2 \cdot a^2 \cdot v v^2 \cdot p_3^{\mu} g^{\nu\rho} + e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\rho} g^{\mu\nu} - e^2 \cdot a^2 \cdot v v^2 \cdot p_1^{\rho} g^{\mu\nu})$
$A_{\mu} \quad \tilde{h}^+ \quad \tilde{h}^-$	$e(p_3^{\mu} - p_2^{\mu})$
$\bar{b}_{ap} \quad b_{bq} \quad A_{\mu}$	$\frac{1}{3} e \delta_{pq} \gamma_{ac}^{\mu} \cdot \delta_{cb}$
$\bar{b}_{ap} \quad b_{bq} \quad G_{\mu r}$	$g_s \cdot \lambda_{pq}^r \gamma_{ab}^{\mu}$
$\bar{b}_{ap} \quad b_{bq} \quad H$	$-\frac{1}{2} \frac{e \cdot M_b}{M_W \cdot s_w} \delta_{pq} \cdot \delta_{ab}$
$\bar{b}_{ap} \quad b_{bq} \quad \rho^0_{\mu}$	$-\frac{1}{4} \frac{e^2 \cdot a \cdot v v}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$

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$\bar{b}_{ap} \quad b_{bq} \quad Z_\mu$	$\frac{1}{6} \frac{e}{c_w \cdot s_w} \delta_{pq} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} + 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} - 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{b}_{ap} \quad t_{bq} \quad \rho^-_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{b}_{ap} \quad t_{bq} \quad W^-_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{c}_{ap} \quad c_{bq} \quad A_\mu$	$-\frac{2}{3} e \delta_{pq} \gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{c}_{ap} \quad c_{bq} \quad G_{\mu r}$	$g_s \cdot \lambda_{pq}^r \gamma_{ab}^\mu$
$\bar{c}_{ap} \quad c_{bq} \quad H$	$-\frac{1}{2} \frac{e \cdot M_c}{M_W \cdot s_w} \delta_{pq} \cdot \delta_{ab}$
$\bar{c}_{ap} \quad c_{bq} \quad \rho^0_\mu$	$\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{c}_{ap} \quad c_{bq} \quad Z_\mu$	$\frac{1}{6} \frac{e}{c_w \cdot s_w} \delta_{pq} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} - 4c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 4s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{c}_{ap} \quad s_{bq} \quad \rho^+_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{c}_{ap} \quad s_{bq} \quad W^+_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{d}_{ap} \quad d_{bq} \quad A_\mu$	$\frac{1}{3} e \delta_{pq} \gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{d}_{ap} \quad d_{bq} \quad G_{\mu r}$	$g_s \cdot \lambda_{pq}^r \gamma_{ab}^\mu$
$\bar{d}_{ap} \quad d_{bq} \quad H$	$-\frac{1}{2} \frac{e \cdot M d}{M_W \cdot s_w} \delta_{pq} \cdot \delta_{ab}$
$\bar{d}_{ap} \quad d_{bq} \quad \rho^0_\mu$	$-\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{d}_{ap} \quad d_{bq} \quad Z_\mu$	$\frac{1}{6} \frac{e}{c_w \cdot s_w} \delta_{pq} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} + 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} - 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{d}_{ap} \quad u_{bq} \quad \rho^-_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{d}_{ap} \quad u_{bq} \quad W^-_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{e}_a \quad e_b \quad A_\mu$	$e \gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{e}_a \quad e_b \quad \rho^0_\mu$	$-\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{e}_a \quad e_b \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} - 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{e}_a \quad \nu^e_b \quad \rho^-_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{e}_a \quad \nu^e_b \quad W^-_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\mu}_a \quad \mu_b \quad A_\mu$	$e \gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{\mu}_a \quad \mu_b \quad H$	$-\frac{1}{2} \frac{e \cdot M_\mu}{M_W \cdot s_w} \cdot \delta_{ab}$
$\bar{\mu}_a \quad \mu_b \quad \rho^0_\mu$	$-\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$

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$\bar{\mu}_a \quad \mu_b \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} - 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{\mu}_a \quad \nu^\mu_b \quad \rho^-_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\mu}_a \quad \nu^\mu_b \quad W^-_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\tau}_a \quad \tau_b \quad A_\mu$	$e \gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{\tau}_a \quad \tau_b \quad H$	$-\frac{1}{2} \frac{e \cdot M_{tau}}{M_W \cdot s_w} \cdot \delta_{ab}$
$\bar{\tau}_a \quad \tau_b \quad \rho^0_\mu$	$-\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\tau}_a \quad \tau_b \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} - 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{\tau}_a \quad \nu^\tau_b \quad \rho^-_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\tau}_a \quad \nu^\tau_b \quad W^-_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$G_{\mu p} \quad G_{\nu q} \quad G_{\rho r}$	$g_s f_{pqr} (p_3^\nu g^{\mu\rho} - p_3^\mu g^{\nu\rho} + p_1^\rho g^{\mu\nu} - p_1^\nu g^{\mu\rho} - p_2^\rho g^{\mu\nu} + p_2^\mu g^{\nu\rho})$
$\bar{C}^G_p \quad C^G_q \quad G_{\mu r}$	$g_s \cdot p_2^\mu f_{pqr}$
$H \quad H \quad H$	$-\frac{3}{2} \frac{e \cdot M_H^2}{M_W \cdot s_w}$
$H \quad \rho^+_\mu \quad \rho^-_\nu$	$\frac{1}{4} \frac{e^3 \cdot M_W \cdot a^2 \cdot vv^2}{M_\rho^2 \cdot s_w^3} \cdot g^{\mu\nu}$
$H \quad \rho^+_\mu \quad W^-_\nu$	$-\frac{1}{2} \frac{e^2 \cdot M_W \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot g^{\mu\nu}$
$H \quad \rho^-_\mu \quad W^+_\nu$	$-\frac{1}{2} \frac{e^2 \cdot M_W \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot g^{\mu\nu}$
$H \quad \rho^0_\mu \quad \rho^0_\nu$	$\frac{1}{4} \frac{e^3 \cdot M_W \cdot a^2 \cdot vv^2}{M_\rho^2 \cdot s_w^3} \cdot g^{\mu\nu}$
$H \quad \rho^0_\mu \quad Z_\nu$	$-\frac{1}{2} \frac{e^2 \cdot M_W \cdot a \cdot vv}{c_w \cdot M_\rho \cdot s_w^2} \cdot g^{\mu\nu}$
$H \quad W^+_\mu \quad W^-_\nu$	$\frac{e \cdot M_W}{s_w} \cdot g^{\mu\nu}$
$H \quad Z_\mu \quad Z_\nu$	$\frac{e \cdot M_W}{c_w^2 \cdot s_w} \cdot g^{\mu\nu}$
$H \quad \tilde{h}^+ \quad \tilde{h}^-$	$-2 \frac{M_W \cdot s_w \cdot \lambda_3}{e}$
$H \quad \tilde{h}_1 \quad \tilde{h}_1$	$-2 \frac{M_W \cdot s_w}{e} (\lambda_3 + \lambda_4 + \lambda_5)$
$H \quad \tilde{h}_2 \quad \tilde{h}_2$	$-2 \frac{M_W \cdot s_w}{e} (\lambda_3 + \lambda_4 - \lambda_5)$
$\bar{\nu}^e_a \quad e_b \quad \rho^+_\mu$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}^e_a \quad e_b \quad W^+_\mu$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}^e_a \quad \nu^e_b \quad \rho^0_\mu$	$\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$

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$\bar{\nu}_a^e \quad \nu_b^e \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\mu \quad \mu_b \quad \rho_\mu^+$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\mu \quad \mu_b \quad W_\mu^+$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\mu \quad \nu_b^\mu \quad \rho_\mu^0$	$\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\mu \quad \nu_b^\mu \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\tau \quad \tau_b \quad \rho_\mu^+$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\tau \quad \tau_b \quad W_\mu^+$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\tau \quad \nu_b^\tau \quad \rho_\mu^0$	$\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_\rho \cdot s_w^2} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{\nu}_a^\tau \quad \nu_b^\tau \quad Z_\mu$	$-\frac{1}{2} \frac{e}{c_w \cdot s_w} \cdot \gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\rho_\mu^+ \quad \rho_\nu^- \quad \rho_\rho^0$	$\frac{1}{8} \frac{1}{M_\rho^3 \cdot s_w^4 \cdot a \cdot vv} (e^4 \cdot a^4 \cdot vv^4 \cdot p_1^\nu g^{\mu\rho} - e^4 \cdot a^4 \cdot vv^4 \cdot p_1^\rho g^{\mu\nu} - e^4 \cdot a^4 \cdot vv^4 \cdot p_2^\mu g^{\nu\rho}$ $+ e^4 \cdot a^4 \cdot vv^4 \cdot p_2^\rho g^{\mu\nu} + e^4 \cdot a^4 \cdot vv^4 \cdot p_3^\mu g^{\nu\rho} - e^4 \cdot a^4 \cdot vv^4 \cdot p_3^\nu g^{\mu\rho} - 16 M_\rho^4 \cdot p_1^\nu g^{\mu\rho}$ $+ 32 c_w^2 \cdot M_\rho^4 \cdot p_1^\nu g^{\mu\rho} - 16 c_w^4 \cdot M_\rho^4 \cdot p_1^\nu g^{\mu\rho} + 16 M_\rho^4 \cdot p_1^\rho g^{\mu\nu} - 32 c_w^2 \cdot M_\rho^4 \cdot p_1^\rho g^{\mu\nu}$ $+ 16 c_w^4 \cdot M_\rho^4 \cdot p_1^\rho g^{\mu\nu} + 16 M_\rho^4 \cdot p_2^\mu g^{\nu\rho} - 32 c_w^2 \cdot M_\rho^4 \cdot p_2^\mu g^{\nu\rho} + 16 c_w^4 \cdot M_\rho^4 \cdot p_2^\mu g^{\nu\rho}$ $- 16 M_\rho^4 \cdot p_2^\rho g^{\mu\nu} + 32 c_w^2 \cdot M_\rho^4 \cdot p_2^\rho g^{\mu\nu} - 16 c_w^4 \cdot M_\rho^4 \cdot p_2^\rho g^{\mu\nu} - 16 M_\rho^4 \cdot p_3^\mu g^{\nu\rho}$ $+ 32 c_w^2 \cdot M_\rho^4 \cdot p_3^\mu g^{\nu\rho} - 16 c_w^4 \cdot M_\rho^4 \cdot p_3^\mu g^{\nu\rho} + 16 M_\rho^4 \cdot p_3^\nu g^{\mu\rho} - 32 c_w^2 \cdot M_\rho^4 \cdot p_3^\nu g^{\mu\rho}$ $+ 16 c_w^4 \cdot M_\rho^4 \cdot p_3^\nu g^{\mu\rho})$
$\rho_\mu^+ \quad \rho_\nu^- \quad Z_\rho$	$-\frac{1}{4} \frac{c_w \cdot e}{M_\rho^2 \cdot s_w^3} (e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\nu g^{\mu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\rho g^{\mu\nu} - e^2 \cdot a^2 \cdot vv^2 \cdot p_2^\mu g^{\nu\rho}$ $+ e^2 \cdot a^2 \cdot vv^2 \cdot p_2^\rho g^{\mu\nu} + e^2 \cdot a^2 \cdot vv^2 \cdot p_3^\mu g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_3^\nu g^{\mu\rho} + 4 M_\rho^2 \cdot s_w^2 \cdot p_1^\nu g^{\mu\rho}$ $- 4 M_\rho^2 \cdot s_w^2 \cdot p_1^\rho g^{\mu\nu} - 4 M_\rho^2 \cdot s_w^2 \cdot p_2^\mu g^{\nu\rho} + 4 M_\rho^2 \cdot s_w^2 \cdot p_2^\rho g^{\mu\nu} + 4 M_\rho^2 \cdot s_w^2 \cdot p_3^\mu g^{\nu\rho}$ $- 4 M_\rho^2 \cdot s_w^2 \cdot p_3^\nu g^{\mu\rho})$
$\rho_\mu^+ \quad \rho_\nu^0 \quad W_\rho^-$	$-\frac{1}{4} \frac{e}{M_\rho^2 \cdot s_w^3} (e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\rho g^{\mu\nu} - e^2 \cdot a^2 \cdot vv^2 \cdot p_1^\nu g^{\mu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_3^\mu g^{\nu\rho}$ $+ e^2 \cdot a^2 \cdot vv^2 \cdot p_3^\nu g^{\mu\rho} + e^2 \cdot a^2 \cdot vv^2 \cdot p_2^\mu g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_2^\rho g^{\mu\nu} + 4 M_\rho^2 \cdot s_w^2 \cdot p_1^\rho g^{\mu\nu}$ $- 4 M_\rho^2 \cdot s_w^2 \cdot p_1^\nu g^{\mu\rho} - 4 M_\rho^2 \cdot s_w^2 \cdot p_3^\mu g^{\nu\rho} + 4 M_\rho^2 \cdot s_w^2 \cdot p_3^\nu g^{\mu\rho} + 4 M_\rho^2 \cdot s_w^2 \cdot p_2^\mu g^{\nu\rho}$ $- 4 M_\rho^2 \cdot s_w^2 \cdot p_2^\rho g^{\mu\nu})$
$\rho_\mu^+ \quad \tilde{h}^- \quad \tilde{h}_1$	$\frac{i \cdot M_\rho}{a \cdot vv} (p_2^\mu - p_3^\mu)$

Fields in the vertex	Variational derivative of Lagrangian by fields
$\rho^+_{\mu} \quad \tilde{h}^- \quad \tilde{h}_2$ $\rho^-_{\mu} \quad \rho^0_{\nu} \quad W^+_{\rho}$	$-\frac{M_{\rho}}{a \cdot vv}(p_2^{\mu} - p_3^{\mu})$ $-\frac{1}{4} \frac{e}{M_{\rho}^2 \cdot s_w^3} (e^2 \cdot a^2 \cdot vv^2 \cdot p_3^{\mu} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_3^{\nu} g^{\mu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot p_1^{\rho} g^{\mu\nu}$ $+ e^2 \cdot a^2 \cdot vv^2 \cdot p_1^{\nu} g^{\mu\rho} + e^2 \cdot a^2 \cdot vv^2 \cdot p_2^{\rho} g^{\mu\nu} - e^2 \cdot a^2 \cdot vv^2 \cdot p_2^{\mu} g^{\nu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\mu} g^{\nu\rho}$ $- 4M_{\rho}^2 \cdot s_w^2 \cdot p_3^{\nu} g^{\mu\rho} - 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\rho} g^{\mu\nu} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_1^{\nu} g^{\mu\rho} + 4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\rho} g^{\mu\nu}$ $- 4M_{\rho}^2 \cdot s_w^2 \cdot p_2^{\mu} g^{\nu\rho})$
$\rho^-_{\mu} \quad \tilde{h}^+ \quad \tilde{h}_1$ $\rho^-_{\mu} \quad \tilde{h}^+ \quad \tilde{h}_2$	$-\frac{i \cdot M_{\rho}}{a \cdot vv}(p_3^{\mu} - p_2^{\mu})$ $-\frac{M_{\rho}}{a \cdot vv}(p_3^{\mu} - p_2^{\mu})$
$\rho^0_{\mu} \quad \tilde{h}^+ \quad \tilde{h}^-$ $\rho^0_{\mu} \quad \tilde{h}_1 \quad \tilde{h}_2$	$\frac{M_{\rho}}{a \cdot vv}(p_3^{\mu} - p_2^{\mu})$ $\frac{i \cdot M_{\rho}}{a \cdot vv}(p_3^{\mu} - p_2^{\mu})$
$\bar{s}_{ap} \quad c_{bq} \quad \rho^-_{\mu}$ $\bar{s}_{ap} \quad c_{bq} \quad W^-_{\mu}$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$ $-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{s}_{ap} \quad s_{bq} \quad A_{\mu}$ $\bar{s}_{ap} \quad s_{bq} \quad G_{\mu r}$	$\frac{1}{3} e \delta_{pq} \gamma_{ac}^{\mu} \cdot \delta_{cb}$ $g_s \cdot \lambda_{pq}^r \gamma_{ab}^{\mu}$
$\bar{s}_{ap} \quad s_{bq} \quad H$ $\bar{s}_{ap} \quad s_{bq} \quad \rho^0_{\mu}$	$-\frac{1}{2} \frac{e \cdot M_s}{M_W \cdot s_w} \delta_{pq} \cdot \delta_{ab}$ $-\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{s}_{ap} \quad s_{bq} \quad Z_{\mu}$ $\bar{t}_{ap} \quad b_{bq} \quad \rho^+_{\mu}$	$\frac{1}{6} \frac{e}{c_w \cdot s_w} \delta_{pq} \gamma_{ac}^{\mu} \left(\frac{(1-\gamma^5)_{cb}}{2} + 2c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} - 2s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$ $\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{t}_{ap} \quad b_{bq} \quad W^+_{\mu}$ $\bar{t}_{ap} \quad t_{bq} \quad A_{\mu}$	$-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$ $-\frac{2}{3} e \delta_{pq} \gamma_{ac}^{\mu} \cdot \delta_{cb}$
$\bar{t}_{ap} \quad t_{bq} \quad G_{\mu r}$ $\bar{t}_{ap} \quad t_{bq} \quad H$	$g_s \cdot \lambda_{pq}^r \gamma_{ab}^{\mu}$ $-\frac{1}{2} \frac{e \cdot M_t}{M_W \cdot s_w} \delta_{pq} \cdot \delta_{ab}$
$\bar{t}_{ap} \quad t_{bq} \quad \rho^0_{\mu}$ $\bar{t}_{ap} \quad t_{bq} \quad Z_{\mu}$	$\frac{1}{4} \frac{e^2 \cdot a \cdot vv}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$ $\frac{1}{6} \frac{e}{c_w \cdot s_w} \delta_{pq} \gamma_{ac}^{\mu} \left(\frac{(1-\gamma^5)_{cb}}{2} - 4c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 4s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2} \right)$
$\bar{u}_{ap} \quad d_{bq} \quad \rho^+_{\mu}$ $\bar{u}_{ap} \quad d_{bq} \quad W^+_{\mu}$	$\frac{1}{4} \frac{e^2 \cdot \sqrt{2} \cdot a \cdot vv}{M_{\rho} \cdot s_w^2} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$ $-\frac{1}{2} \frac{e \cdot \sqrt{2}}{s_w} \cdot \delta_{pq} \gamma_{ac}^{\mu} \frac{(1-\gamma^5)_{cb}}{2}$

Fields in the vertex	Variational derivative of Lagrangian by fields
$\bar{u}_{ap} \quad u_{bq} \quad A_\mu$	$-\frac{2}{3}e\delta_{pq}\gamma_{ac}^\mu \cdot \delta_{cb}$
$\bar{u}_{ap} \quad u_{bq} \quad G_{\mu r}$	$g_s \cdot \lambda_{pq}^r \gamma_{ab}^\mu$
$\bar{u}_{ap} \quad u_{bq} \quad H$	$-\frac{1}{2}\frac{e \cdot M u}{M_W \cdot s_w}\delta_{pq} \cdot \delta_{ab}$
$\bar{u}_{ap} \quad u_{bq} \quad \rho^0_\mu$	$\frac{1}{4}\frac{e^2 \cdot a \cdot v v}{M_\rho \cdot s_w^2} \cdot \delta_{pq}\gamma_{ac}^\mu \frac{(1-\gamma^5)_{cb}}{2}$
$\bar{u}_{ap} \quad u_{bq} \quad Z_\mu$	$\frac{1}{6}\frac{e}{c_w \cdot s_w}\delta_{pq}\gamma_{ac}^\mu \left(\frac{(1-\gamma^5)_{cb}}{2} - 4c_w^2 \cdot \frac{(1-\gamma^5)_{cb}}{2} + 4s_w^2 \cdot \frac{(1+\gamma^5)_{cb}}{2}\right)$
$W^+_\mu \quad W^-_\nu \quad Z_\rho$	$-\frac{1}{4}\frac{c_w \cdot e}{s_w^3 \cdot M_\rho^2}(4M_\rho^2 \cdot s_w^2 \cdot p_1^\nu g^{\mu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot p_1^\rho g^{\mu\nu} - 4M_\rho^2 \cdot s_w^2 \cdot p_2^\mu g^{\nu\rho}$ $+4M_\rho^2 \cdot s_w^2 \cdot p_2^\rho g^{\mu\nu} + 4M_\rho^2 \cdot s_w^2 \cdot p_3^\mu g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot p_3^\rho g^{\mu\nu} + e^2 \cdot a^2 \cdot v v^2 \cdot p_1^\nu g^{\mu\rho}$ $-e^2 \cdot a^2 \cdot v v^2 \cdot p_1^\rho g^{\mu\nu} - e^2 \cdot a^2 \cdot v v^2 \cdot p_2^\mu g^{\nu\rho} + e^2 \cdot a^2 \cdot v v^2 \cdot p_2^\rho g^{\mu\nu} + e^2 \cdot a^2 \cdot v v^2 \cdot p_3^\mu g^{\nu\rho}$ $-e^2 \cdot a^2 \cdot v v^2 \cdot p_3^\rho g^{\mu\nu})$
$W^+_\mu \quad \tilde{h}^- \quad \tilde{h}_1$	$\frac{1}{2}\frac{i \cdot e}{s_w}(p_2^\mu - p_3^\mu)$
$W^+_\mu \quad \tilde{h}^- \quad \tilde{h}_2$	$-\frac{1}{2}\frac{e}{s_w}(p_2^\mu - p_3^\mu)$
$W^-_\mu \quad \tilde{h}^+ \quad \tilde{h}_1$	$-\frac{1}{2}\frac{i \cdot e}{s_w}(p_3^\mu - p_2^\mu)$
$W^-_\mu \quad \tilde{h}^+ \quad \tilde{h}_2$	$-\frac{1}{2}\frac{e}{s_w}(p_3^\mu - p_2^\mu)$
$Z_\mu \quad \tilde{h}^+ \quad \tilde{h}^-$	$-\frac{1}{2}\frac{e}{c_w \cdot s_w}(p_3^\mu - 2c_w^2 \cdot p_3^\mu - p_2^\mu + 2c_w^2 \cdot p_2^\mu)$
$Z_\mu \quad \tilde{h}_1 \quad \tilde{h}_2$	$-\frac{1}{2}\frac{i \cdot e}{c_w \cdot s_w}(p_2^\mu - p_3^\mu)$
$A_\mu \quad A_\nu \quad \rho^+_\rho \quad \rho^-_\sigma$	$-\frac{1}{4}\frac{e^2}{M_\rho^2 \cdot s_w^2}(2e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho})$
$A_\mu \quad A_\nu \quad W^+_\rho \quad W^-_\sigma$	$-\frac{1}{4}\frac{e^2}{M_\rho^2 \cdot s_w^2}(8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+2e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\sigma} g^{\nu\rho})$
$A_\mu \quad A_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$2e^2 \cdot g^{\mu\nu}$
$A_\mu \quad \rho^+_\nu \quad \rho^-_\rho \quad \rho^0_\sigma$	$\frac{1}{8}\frac{e}{M_\rho^3 \cdot s_w^4 \cdot a \cdot v v}(2e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\sigma} g^{\nu\rho} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\rho} g^{\nu\sigma} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\nu} g^{\rho\sigma}$ $-32M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 64c_w^2 \cdot M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32c_w^4 \cdot M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+16M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma}$ $+16M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma})$
$A_\mu \quad \rho^+_\nu \quad \rho^-_\rho \quad Z_\sigma$	$-\frac{1}{4}\frac{c_w \cdot e^2}{M_\rho^2 \cdot s_w^3}(2e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\nu} g^{\rho\sigma}$

Fields in the vertex	Variational derivative of Lagrangian by fields
$A_\mu \quad \rho^+_\nu \quad \rho^0_\rho \quad W^-_\sigma$	$+8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma})$ $-\frac{1}{4} \frac{e^2}{M_\rho^2 \cdot s_w^3} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma})$ $+8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma})$
$A_\mu \quad \rho^+_\nu \quad \tilde{h}^- \quad \tilde{h}_1$	$\frac{i \cdot e \cdot M_\rho}{a \cdot vv} \cdot g^{\mu\nu}$
$A_\mu \quad \rho^+_\nu \quad \tilde{h}^- \quad \tilde{h}_2$	$-\frac{e \cdot M_\rho}{a \cdot vv} \cdot g^{\mu\nu}$
$A_\mu \quad \rho^-_\nu \quad \rho^0_\rho \quad W^+_\sigma$	$-\frac{1}{4} \frac{e^2}{M_\rho^2 \cdot s_w^3} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho})$ $+8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho})$
$A_\mu \quad \rho^-_\nu \quad \tilde{h}^+ \quad \tilde{h}_1$	$-\frac{i \cdot e \cdot M_\rho}{a \cdot vv} \cdot g^{\mu\nu}$
$A_\mu \quad \rho^-_\nu \quad \tilde{h}^+ \quad \tilde{h}_2$	$-\frac{e \cdot M_\rho}{a \cdot vv} \cdot g^{\mu\nu}$
$A_\mu \quad \rho^0_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$2 \frac{e \cdot M_\rho}{a \cdot vv} \cdot g^{\mu\nu}$
$A_\mu \quad W^+_\nu \quad W^-_\rho \quad Z_\sigma$	$-\frac{1}{4} \frac{c_w \cdot e^2}{s_w^3 \cdot M_\rho^2} (8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma})$ $+2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma})$
$A_\mu \quad W^+_\nu \quad \tilde{h}^- \quad \tilde{h}_1$	$\frac{1}{2} \frac{i \cdot e^2}{s_w} \cdot g^{\mu\nu}$
$A_\mu \quad W^+_\nu \quad \tilde{h}^- \quad \tilde{h}_2$	$-\frac{1}{2} \frac{e^2}{s_w} \cdot g^{\mu\nu}$
$A_\mu \quad W^-_\nu \quad \tilde{h}^+ \quad \tilde{h}_1$	$-\frac{1}{2} \frac{i \cdot e^2}{s_w} \cdot g^{\mu\nu}$
$A_\mu \quad W^-_\nu \quad \tilde{h}^+ \quad \tilde{h}_2$	$-\frac{1}{2} \frac{e^2}{s_w} \cdot g^{\mu\nu}$
$A_\mu \quad Z_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$-\frac{e^2}{c_w \cdot s_w} g^{\mu\nu} (1 - 2c_w^2)$
$G_{\mu p} \quad G_{\nu q} \quad G_{\rho r} \quad G_{\sigma s}$	$g_s^2 (g^{\mu\rho} g^{\nu\sigma} f_{pqt} f_{rst} - g^{\mu\sigma} g^{\nu\rho} f_{pqt} f_{rst} + g^{\mu\nu} g^{\rho\sigma} f_{prt} f_{qst}$ $- g^{\mu\sigma} g^{\nu\rho} f_{prt} f_{qst} + g^{\mu\nu} g^{\rho\sigma} f_{pst} f_{qrt} - g^{\mu\rho} g^{\nu\sigma} f_{pst} f_{qrt})$
$H \quad H \quad H \quad H$	$-\frac{3}{4} \frac{e^2 \cdot M_H^2}{M_W^2 \cdot s_w^2}$
$H \quad H \quad \rho^+_\mu \quad \rho^-_\nu$	$\frac{1}{8} \frac{e^4 \cdot a^2 \cdot vv^2}{M_\rho^2 \cdot s_w^4} \cdot g^{\mu\nu}$
$H \quad H \quad \rho^+_\mu \quad W^-_\nu$	$-\frac{1}{4} \frac{e^3 \cdot a \cdot vv}{M_\rho \cdot s_w^3} \cdot g^{\mu\nu}$
$H \quad H \quad \rho^-_\mu \quad W^+_\nu$	$-\frac{1}{4} \frac{e^3 \cdot a \cdot vv}{M_\rho \cdot s_w^3} \cdot g^{\mu\nu}$
$H \quad H \quad \rho^0_\mu \quad \rho^0_\nu$	$\frac{1}{8} \frac{e^4 \cdot a^2 \cdot vv^2}{M_\rho^2 \cdot s_w^4} \cdot g^{\mu\nu}$
$H \quad H \quad \rho^0_\mu \quad Z_\nu$	$-\frac{1}{4} \frac{e^3 \cdot a \cdot vv}{c_w \cdot M_\rho \cdot s_w^3} \cdot g^{\mu\nu}$

Fields in the vertex	Variational derivative of Lagrangian by fields
$H \quad H \quad W^+_{\mu} \quad W^-_{\nu}$	$\frac{1}{2} \frac{e^2}{s_w^2} \cdot g^{\mu\nu}$
$H \quad H \quad Z_{\mu} \quad Z_{\nu}$	$\frac{1}{2} \frac{e^2}{c_w^2 \cdot s_w^2} \cdot g^{\mu\nu}$
$H \quad H \quad \tilde{h}^+ \quad \tilde{h}^-$	$-\lambda_3$
$H \quad H \quad \tilde{h}_1 \quad \tilde{h}_1$	$-(\lambda_3 + \lambda_4 + \lambda_5)$
$H \quad H \quad \tilde{h}_2 \quad \tilde{h}_2$	$-(\lambda_3 + \lambda_4 - \lambda_5)$
$\rho^+_{\mu} \quad \rho^+_{\nu} \quad \rho^-_{\rho} \quad \rho^-_{\sigma}$	$\frac{1}{16} \frac{1}{M_{\rho}^4 \cdot s_w^6 \cdot a^2 \cdot v v^2} (2e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\nu} g^{\rho\sigma} - e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\sigma} g^{\nu\rho} + 128 M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 384 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma} + 384 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma} - 128 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 64 M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho} + 192 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho} - 192 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 64 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho} - e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\rho} g^{\nu\sigma} - 64 M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma}$ $+ 192 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma} - 192 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma} + 64 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma})$
$\rho^+_{\mu} \quad \rho^+_{\nu} \quad \rho^-_{\rho} \quad W^-_{\sigma}$	$-\frac{1}{8} \frac{e}{M_{\rho}^3 \cdot s_w^5 \cdot a \cdot v v} (2e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\nu} g^{\rho\sigma} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\sigma} g^{\nu\rho} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\rho} g^{\nu\sigma}$ $- 32 M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 64 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma}$ $+ 16 M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 16 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 16 M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma})$
$\rho^+_{\mu} \quad \rho^+_{\nu} \quad W^-_{\rho} \quad W^-_{\sigma}$	$\frac{1}{4} \frac{e^2}{M_{\rho}^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\sigma} g^{\nu\rho} + 8 M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 4 M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot v v^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4 M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma})$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \rho^-_{\rho} \quad W^+_{\sigma}$	$-\frac{1}{8} \frac{e}{M_{\rho}^3 \cdot s_w^5 \cdot a \cdot v v} (2e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\sigma} g^{\nu\rho} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\rho} g^{\nu\sigma} - e^4 \cdot a^4 \cdot v v^4 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 32 M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 64 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 16 M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma}$ $+ 16 M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32 c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 16 c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma})$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \rho^0_{\rho} \quad \rho^0_{\sigma}$	$-\frac{1}{16} \frac{1}{M_{\rho}^4 \cdot s_w^6 \cdot a^2 \cdot v v^2} (2e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\nu} g^{\rho\sigma} - e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\rho} g^{\nu\sigma} - e^6 \cdot a^6 \cdot v v^6 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 128 M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma} - 384 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma} + 384 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 128 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\nu} g^{\rho\sigma} - 64 M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma} + 192 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma}$ $- 192 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma} + 64 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\rho} g^{\nu\sigma} - 64 M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 192 c_w^2 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho} - 192 c_w^4 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho} + 64 c_w^6 \cdot M_{\rho}^6 \cdot g^{\mu\sigma} g^{\nu\rho})$

Fields in the vertex	Variational derivative of Lagrangian by fields
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \rho^0_{\rho} \quad Z_{\sigma}$	$\frac{1}{8} \frac{c_w \cdot e}{M_{\rho}^3 \cdot s_w^5 \cdot a \cdot vv} (2e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\nu} g^{\rho\sigma} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\rho} g^{\nu\sigma} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\sigma} g^{\nu\rho}$ $- 32M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 64c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma}$ $+ 16M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma}$ $+ 16M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 16c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho})$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad W^+_{\rho} \quad W^-_{\sigma}$	$\frac{1}{4} \frac{e^2}{M_{\rho}^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma}$ $+ 8M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma})$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad Z_{\rho} \quad Z_{\sigma}$	$- \frac{1}{4} \frac{c_w^2 \cdot e^2}{M_{\rho}^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 8M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho})$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \tilde{h}^+ \quad \tilde{h}^-$	$2 \frac{M_{\rho}^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \tilde{h}_1 \quad \tilde{h}_1$	$2 \frac{M_{\rho}^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad \rho^-_{\nu} \quad \tilde{h}_2 \quad \tilde{h}_2$	$2 \frac{M_{\rho}^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad \rho^0_{\nu} \quad \rho^0_{\rho} \quad W^-_{\sigma}$	$\frac{1}{8} \frac{e}{M_{\rho}^3 \cdot s_w^5 \cdot a \cdot vv} (2e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\sigma} g^{\nu\rho} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\nu} g^{\rho\sigma} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\rho} g^{\nu\sigma}$ $- 32M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 64c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 16M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 16c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\nu} g^{\rho\sigma}$ $+ 16M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32c_w^2 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16c_w^4 \cdot M_{\rho}^4 \cdot g^{\mu\rho} g^{\nu\sigma})$
$\rho^+_{\mu} \quad \rho^0_{\nu} \quad W^-_{\rho} \quad Z_{\sigma}$	$- \frac{1}{4} \frac{c_w \cdot e^2}{M_{\rho}^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho}$ $+ 8M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho})$
$\rho^+_{\mu} \quad W^-_{\nu} \quad \tilde{h}^+ \quad \tilde{h}^-$	$\frac{e \cdot M_{\rho}}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad W^-_{\nu} \quad \tilde{h}_1 \quad \tilde{h}_1$	$\frac{e \cdot M_{\rho}}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad W^-_{\nu} \quad \tilde{h}_2 \quad \tilde{h}_2$	$\frac{e \cdot M_{\rho}}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad Z_{\nu} \quad \tilde{h}^- \quad \tilde{h}_1$	$- \frac{i \cdot e \cdot M_{\rho} \cdot s_w}{c_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^+_{\mu} \quad Z_{\nu} \quad \tilde{h}^- \quad \tilde{h}_2$	$\frac{e \cdot M_{\rho} \cdot s_w}{c_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^-_{\mu} \quad \rho^-_{\nu} \quad W^+_{\rho} \quad W^+_{\sigma}$	$\frac{1}{4} \frac{e^2}{M_{\rho}^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} + 8M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma}$ $- 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_{\rho}^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma})$
$\rho^-_{\mu} \quad \rho^0_{\nu} \quad \rho^0_{\rho} \quad W^+_{\sigma}$	$\frac{1}{8} \frac{e}{M_{\rho}^3 \cdot s_w^5 \cdot a \cdot vv} (2e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\sigma} g^{\nu\rho} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\rho} g^{\nu\sigma} - e^4 \cdot a^4 \cdot vv^4 \cdot g^{\mu\nu} g^{\rho\sigma}$

Fields in the vertex	Variational derivative of Lagrangian by fields
$\rho^-{}_\mu \quad \rho^0{}_\nu \quad W^+{}_\rho \quad Z_\sigma$	$ \begin{aligned} & -32M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho} + 64c_w^2 \cdot M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho} - 32c_w^4 \cdot M_\rho^4 \cdot g^{\mu\sigma} g^{\nu\rho} \\ & + 16M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma} - 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma} + 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\rho} g^{\nu\sigma} \\ & + 16M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma} - 32c_w^2 \cdot M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma} + 16c_w^4 \cdot M_\rho^4 \cdot g^{\mu\nu} g^{\rho\sigma} \\ & - \frac{1}{4} \frac{c_w \cdot e^2}{M_\rho^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} \\ & + 8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma}) \end{aligned} $
$\rho^-{}_\mu \quad W^+{}_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$\frac{e \cdot M_\rho}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^-{}_\mu \quad W^+{}_\nu \quad \tilde{h}_1 \quad \tilde{h}_1$	$\frac{e \cdot M_\rho}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^-{}_\mu \quad W^+{}_\nu \quad \tilde{h}_2 \quad \tilde{h}_2$	$\frac{e \cdot M_\rho}{s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^-{}_\mu \quad Z_\nu \quad \tilde{h}^+ \quad \tilde{h}_1$	$\frac{i \cdot e \cdot M_\rho \cdot s_w}{c_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^-{}_\mu \quad Z_\nu \quad \tilde{h}^+ \quad \tilde{h}_2$	$\frac{e \cdot M_\rho \cdot s_w}{c_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^0{}_\mu \quad \rho^0{}_\nu \quad W^+{}_\rho \quad W^-{}_\sigma$	$ \begin{aligned} & -\frac{1}{4} \frac{e^2}{M_\rho^2 \cdot s_w^4} (2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} \\ & + 8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho}) \end{aligned} $
$\rho^0{}_\mu \quad \rho^0{}_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$2 \frac{M_\rho^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^0{}_\mu \quad \rho^0{}_\nu \quad \tilde{h}_1 \quad \tilde{h}_1$	$2 \frac{M_\rho^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^0{}_\mu \quad \rho^0{}_\nu \quad \tilde{h}_2 \quad \tilde{h}_2$	$2 \frac{M_\rho^2}{a^2 \cdot vv^2} \cdot g^{\mu\nu}$
$\rho^0{}_\mu \quad Z_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$-\frac{e \cdot M_\rho}{c_w \cdot s_w \cdot a \cdot vv} g^{\mu\nu} (1 - 2c_w^2)$
$\rho^0{}_\mu \quad Z_\nu \quad \tilde{h}_1 \quad \tilde{h}_1$	$\frac{e \cdot M_\rho}{c_w \cdot s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$\rho^0{}_\mu \quad Z_\nu \quad \tilde{h}_2 \quad \tilde{h}_2$	$\frac{e \cdot M_\rho}{c_w \cdot s_w \cdot a \cdot vv} \cdot g^{\mu\nu}$
$W^+{}_\mu \quad W^+{}_\nu \quad W^-{}_\rho \quad W^-{}_\sigma$	$ \begin{aligned} & \frac{1}{4} \frac{e^2}{s_w^4 \cdot M_\rho^2} (8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} + 2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} \\ & - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma}) \end{aligned} $
$W^+{}_\mu \quad W^-{}_\nu \quad Z_\rho \quad Z_\sigma$	$ \begin{aligned} & -\frac{1}{4} \frac{c_w^2 \cdot e^2}{s_w^4 \cdot M_\rho^2} (8M_\rho^2 \cdot s_w^2 \cdot g^{\mu\nu} g^{\rho\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\rho} g^{\nu\sigma} - 4M_\rho^2 \cdot s_w^2 \cdot g^{\mu\sigma} g^{\nu\rho} \\ & + 2e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\nu} g^{\rho\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\rho} g^{\nu\sigma} - e^2 \cdot a^2 \cdot vv^2 \cdot g^{\mu\sigma} g^{\nu\rho}) \end{aligned} $
$W^+{}_\mu \quad W^-{}_\nu \quad \tilde{h}^+ \quad \tilde{h}^-$	$\frac{1}{2} \frac{e^2}{s_w^2} \cdot g^{\mu\nu}$
$W^+{}_\mu \quad W^-{}_\nu \quad \tilde{h}_1 \quad \tilde{h}_1$	$\frac{1}{2} \frac{e^2}{s_w^2} \cdot g^{\mu\nu}$
$W^+{}_\mu \quad W^-{}_\nu \quad \tilde{h}_2 \quad \tilde{h}_2$	$\frac{1}{2} \frac{e^2}{s_w^2} \cdot g^{\mu\nu}$

Fields in the vertex	Variational derivative of Lagrangian by fields
$W^+_{\mu} \quad Z_{\nu} \quad \tilde{h}^- \quad \tilde{h}_1$	$-\frac{1}{2} \frac{i \cdot e^2}{c_w} \cdot g^{\mu\nu}$
$W^+_{\mu} \quad Z_{\nu} \quad \tilde{h}^- \quad \tilde{h}_2$	$\frac{1}{2} \frac{e^2}{c_w} \cdot g^{\mu\nu}$
$W^-_{\mu} \quad Z_{\nu} \quad \tilde{h}^+ \quad \tilde{h}_1$	$\frac{1}{2} \frac{i \cdot e^2}{c_w} \cdot g^{\mu\nu}$
$W^-_{\mu} \quad Z_{\nu} \quad \tilde{h}^+ \quad \tilde{h}_2$	$\frac{1}{2} \frac{e^2}{c_w} \cdot g^{\mu\nu}$
$Z_{\mu} \quad Z_{\nu} \quad \tilde{h}^+ \quad \tilde{h}^-$	$\frac{1}{2} \frac{e^2}{c_w^2 \cdot s_w^2} g^{\mu\nu} (1 - 4c_w^2 + 4c_w^4)$
$Z_{\mu} \quad Z_{\nu} \quad \tilde{h}_1 \quad \tilde{h}_1$	$\frac{1}{2} \frac{e^2}{c_w^2 \cdot s_w^2} \cdot g^{\mu\nu}$
$Z_{\mu} \quad Z_{\nu} \quad \tilde{h}_2 \quad \tilde{h}_2$	$\frac{1}{2} \frac{e^2}{c_w^2 \cdot s_w^2} \cdot g^{\mu\nu}$
$\tilde{h}^+ \quad \tilde{h}^+ \quad \tilde{h}^- \quad \tilde{h}^-$	$-4\lambda_D$
$\tilde{h}^+ \quad \tilde{h}^- \quad \tilde{h}_1 \quad \tilde{h}_1$	$-2\lambda_D$
$\tilde{h}^+ \quad \tilde{h}^- \quad \tilde{h}_2 \quad \tilde{h}_2$	$-2\lambda_D$
$\tilde{h}_1 \quad \tilde{h}_1 \quad \tilde{h}_1 \quad \tilde{h}_1$	$-6\lambda_D$
$\tilde{h}_1 \quad \tilde{h}_1 \quad \tilde{h}_2 \quad \tilde{h}_2$	$-2\lambda_D$
$\tilde{h}_2 \quad \tilde{h}_2 \quad \tilde{h}_2 \quad \tilde{h}_2$	$-6\lambda_D$