Summary

A. fermionic ψ

$$\frac{1}{2g^2}\psi\Sigma\psi \to \frac{8}{a^2}\mathrm{tr}(a\cdot A J)$$

$$\frac{1}{8g^2}(\psi\Sigma\psi)(\psi\Sigma\psi) \to \frac{4}{a^2}\mathrm{tr}(A^2) - \frac{8}{a^4}\mathrm{tr}(a\cdot A\, a\cdot A)$$

$$\frac{1}{48g^6}(\psi\Sigma\psi)(\psi\Sigma\psi)(\psi\Sigma\psi) \to \frac{32}{3a^6}\mathrm{tr}(a\cdot A\, a\cdot A\, a\cdot A J) - \frac{8}{a^4}\mathrm{tr}(a\cdot A\, A^2 J)$$

$$\frac{1}{384g^6}(\psi\Sigma\psi)^4 \to -\frac{2}{a^4}\mathrm{tr}(A^4) - \frac{1}{a^4}\mathrm{tr}(F^{\mu\nu}F_{\nu\mu}) + \cdots$$

B. bosonic

$$-\frac{1}{2g^2}\alpha\Sigma\alpha \to -\frac{10}{a^2}\mathrm{tr}(a\cdot A J) - \frac{5}{a^2}\mathrm{tr}(A^2)$$

$$\frac{1}{8g^4}\alpha\Sigma\alpha\,\alpha\Sigma\alpha \to \frac{10}{a^4}\mathrm{tr}(a\cdot A\, a\cdot A) + \frac{10}{a^4}\mathrm{tr}(a\cdot A\, A^2 J) + \frac{5}{2a^4}\mathrm{tr}\,A^4 + \frac{1}{4a^4}\mathrm{tr}(F^{\mu\nu}F_{\nu\mu})$$

...

C. ghost

$$-\frac{1}{g^2}b\Sigma c \to \frac{2}{a^2}\mathrm{tr}(a\cdot A J) + \frac{1}{a^2}\mathrm{tr}(A^2)$$

$$\frac{1}{2g^2}b\Sigma c\, b\Sigma c \to -\frac{2}{a^4}\mathrm{tr}(a\cdot A\, a\cdot A) - \frac{2}{a^4}\mathrm{tr}(a\cdot A\, A^2 J) - \frac{1}{2a^4}\mathrm{tr}\,A^4$$