Top-left matrix (saturated propagator, spin-1 sector)

	$\sigma_{1+}^{\#1}{}^{\dagger\,\alpha\beta}$	$\sigma_{1+}^{\#2}{}^{\dagger\,\alpha\beta}$	$\tau_{1+}^{\#1}{}^{\dagger\,\alpha\beta}$	$\sigma_{1-}^{\#1}{}^{\dagger\,\alpha}$	$\sigma_{1-}^{\#2}{}^{\dagger\,\alpha}$	$\tau_{1-}^{\#1}{}^{\dagger\,\alpha}$	$\tau_{1-}^{\#2}{}^{\dagger\,\alpha}$
$\tau_{1-}^{\#2}{}_\alpha$	0	0	0	$-\dfrac{6\,i\,k}{(3+2k^2)^2\,t_3}$	$\dfrac{3\,i\,\sqrt2\,k}{(3+2k^2)^2\,t_3}$	0	$\dfrac{6\,k^2}{(3+2k^2)^2\,t_3}$
$\tau_{1-}^{\#1}{}_\alpha$	0	0	0	0	0	0	0
$\sigma_{1-}^{\#2}{}_\alpha$	0	0	0	$\dfrac{3\,\sqrt2}{(3+2k^2)^2\,t_3}$	$-\dfrac{3}{(3+2k^2)^2\,t_3}$	0	$-\dfrac{3\,i\,\sqrt2\,k}{(3+2k^2)^2\,t_3}$
$\sigma_{1-}^{\#1}{}_\alpha$	0	0	0	$\dfrac{6}{(3+2k^2)^2\,t_3}$	$\dfrac{3\,\sqrt2}{(3+2k^2)^2\,t_3}$	0	$\dfrac{6\,i\,k}{(3+2k^2)^2\,t_3}$
$\tau_{1+}^{\#1}{}_{\alpha\beta}$	$-\dfrac{2\,i\,\sqrt2}{3k^2 r_3+3k^3 r_3}$	$\dfrac{i(9k^2 r_3+4t_2)}{3k(1+k^2)^2 r_3 t_2}$	$\dfrac{9k^2 r_3+4t_2}{3(1+k^2)^2 r_3 t_2}$	0	0	0	0
$\sigma_{1+}^{\#2}{}_{\alpha\beta}$	$-\dfrac{2\,\sqrt2}{3k^2 r_3+3k^4 r_3}$	$\dfrac{9k^2 r_3+4t_2}{3(k+k^3)^2 r_3 t_2}$	$-\dfrac{i(9k^2 r_3+4t_2)}{3k(1+k^2)^2 r_3 t_2}$	0	0	0	0
$\sigma_{1+}^{\#1}{}_{\alpha\beta}$	$\dfrac{2}{3k^2 r_3}$	$-\dfrac{2\,\sqrt2}{3k^2 r_3+3k^4 r_3}$	$\dfrac{2\,i\,\sqrt2}{3k r_3+3k^3 r_3}$	0	0	0	0

Middle matrix

	$\omega_{1+}^{\#1}{}^{\dagger\,\alpha\beta}$	$\omega_{1+}^{\#2}{}^{\dagger\,\alpha\beta}$	$f_{1+}^{\#1}{}^{\dagger\,\alpha\beta}$	$\omega_{1-}^{\#1}{}^{\dagger\,\alpha}$	$\omega_{1-}^{\#2}{}^{\dagger\,\alpha}$	$f_{1-}^{\#1}{}^{\dagger\,\alpha}$	$f_{1-}^{\#2}{}^{\dagger\,\alpha}$
$f_{1-}^{\#2}{}_\alpha$	0	0	0	$-\dfrac{2}{3}i k t_3$	$\dfrac{1}{3}i\sqrt2\,k t_3$	0	$\dfrac{2k^2 t_3}{3}$
$f_{1-}^{\#1}{}_\alpha$	0	0	0	0	0	0	0
$\omega_{1-}^{\#2}{}_\alpha$	0	0	0	$-\dfrac{\sqrt2\,t_3}{3}$	$\dfrac{t_3}{3}$	0	$-\dfrac{1}{3}i\sqrt2\,k t_3$
$\omega_{1-}^{\#1}{}_\alpha$	0	0	0	$\dfrac{2t_3}{3}$	$-\dfrac{\sqrt2\,t_3}{3}$	0	$\dfrac{2 i k t_3}{3}$
$f_{1+}^{\#1}{}_{\alpha\beta}$	$\dfrac{1}{3}i\sqrt2\,k t_2$	$\dfrac{i k t_2}{3}$	$\dfrac{k^2 t_2}{3}$	0	0	0	0
$\omega_{1+}^{\#2}{}_{\alpha\beta}$	$\dfrac{\sqrt2\,t_2}{3}$	$\dfrac{t_2}{3}$	$-\dfrac{1}{3}i k t_2$	0	0	0	0
$\omega_{1+}^{\#1}{}_{\alpha\beta}$	$\dfrac{1}{6}(9k^2 r_3+4t_2)$	$\dfrac{\sqrt2\,t_2}{3}$	$-\dfrac{1}{3}i\sqrt2\,k t_2$	0	0	0	0

Small matrices (right)

	$\sigma_{2+}^{\#1}{}_{\alpha\beta}$	$\tau_{2+}^{\#1}{}_{\alpha\beta}$	$\sigma_{2-}^{\#1}{}_{\alpha\beta\chi}$
$\sigma_{2+}^{\#1}{}^{\dagger\,\alpha\beta}$	0	0	0
$\tau_{2+}^{\#1}{}^{\dagger\,\alpha\beta}$	0	0	0
$\sigma_{2-}^{\#1}{}^{\dagger\,\alpha\beta\chi}$	$-\dfrac{2}{3k^2 r_3}$	0	0

	$\omega_{0+}^{\#1}$	$f_{0+}^{\#1}$	$f_{0+}^{\#2}$	$\omega_{0-}^{\#1}$
$\omega_{0+}^{\#1}{}^\dagger$	t_3	$-i\sqrt2\,k t_3$	0	0
$f_{0+}^{\#1}{}^\dagger$	$i\sqrt2\,k t_3$	$2k^2 t_3$	0	0
$f_{0+}^{\#2}{}^\dagger$	0	0	0	0
$\omega_{0-}^{\#1}{}^\dagger$	0	0	0	$k^2 r_2+t_2$

	$\omega_{2+}^{\#1}{}_{\alpha\beta}$	$f_{2+}^{\#1}{}_{\alpha\beta}$	$\omega_{2-}^{\#1}{}_{\alpha\beta\chi}$
$\omega_{2+}^{\#1}{}^{\dagger\,\alpha\beta}$	$-\dfrac{3k^2 r_3}{2}$	0	0
$f_{2+}^{\#1}{}^{\dagger\,\alpha\beta}$	0	0	0
$\omega_{2-}^{\#1}{}^{\dagger\,\alpha\beta\chi}$	0	0	0

	$\sigma_{0+}^{\#1}$	$\tau_{0+}^{\#1}$	$\tau_{0+}^{\#2}$	$\sigma_{0-}^{\#1}$
$\sigma_{0+}^{\#1}{}^\dagger$	$\dfrac{1}{(1+2k^2)^2 t_3}$	$-\dfrac{i\sqrt2\,k}{(1+2k^2)^2 t_3}$	0	0
$\tau_{0+}^{\#1}{}^\dagger$	$\dfrac{i\sqrt2\,k}{(1+2k^2)^2 t_3}$	$\dfrac{2k^2}{(1+2k^2)^2 t_3}$	0	0
$\tau_{0+}^{\#2}{}^\dagger$	0	0	0	0
$\sigma_{0-}^{\#1}{}^\dagger$	0	0	0	$\dfrac{1}{k^2 r_2+t_2}$

Source constraints

SO(3) irreps	#
$\tau_{0+}^{\#2}==0$	1
$\tau_{0+}^{\#1}-2ik\,\sigma_{0+}^{\#1}==0$	1
$\tau_{1-}^{\#2\,\alpha}-ik\,\sigma_{1-}^{\#1\,\alpha}==0$	3
$\tau_{1-}^{\#1\,\alpha}==0$	3
$\sigma_{1-}^{\#1\,\alpha}+2\,\sigma_{1-}^{\#2\,\alpha}==0$	3
$\tau_{1+}^{\#1\,\alpha\beta}+ik\,\sigma_{1+}^{\#2\,\alpha\beta}==0$	3
$\sigma_{2-}^{\#1\,\alpha\beta\chi}==0$	5
$\tau_{2+}^{\#1\,\alpha\beta}==0$	5
Total #:	24

Lagrangian density

$$\frac{2}{3} t_3\, \omega_i{}^{\alpha i}\,\omega_{\kappa\alpha}{}^\kappa + \frac{2}{3} t_2\, \omega_i{}^{\kappa\lambda}\,\omega_{\kappa\lambda}{}^i + \frac{1}{3} t_2\, \omega_{\kappa\lambda}{}^i\,\omega^{\kappa\lambda}{}_i +$$
$$\frac{2}{3} r_2\, \partial^\beta\omega_\kappa{}^{\theta\alpha}\,\partial_\theta\omega_{\alpha\beta}{}^\kappa - \frac{1}{3} r_2\, \partial_\theta\omega_{\alpha\beta}{}^\kappa\,\partial_\kappa\omega^{\theta\alpha\beta} -$$
$$r_3\,\partial_\alpha\omega_\lambda{}^\alpha{}_\theta\,\partial_\kappa\omega^{\theta\kappa\lambda} - r_3\,\partial_\theta\omega_\lambda{}^\alpha{}_\alpha\,\partial_\kappa\omega^{\theta\kappa\lambda} + \frac{1}{6} t_2\,\partial^\alpha f_{\theta\kappa}\,\partial^\kappa f_\alpha{}^\theta -$$
$$\frac{1}{6} t_2\,\partial^\alpha f_{\kappa\theta}\,\partial^\kappa f_\alpha{}^\theta + \frac{1}{6} t_2\,\partial^\alpha f^\lambda{}_\alpha\,\partial^\kappa f_{\kappa\lambda} - \frac{2}{3} t_3\,\omega_{\kappa\alpha}{}^\alpha\,\partial^\kappa f'{}_i -$$
$$\frac{2}{3} t_3\,\omega_\kappa{}^\lambda{}_\lambda\,\partial^\kappa f'{}_i - \frac{4}{3} t_3\,\partial^\alpha f_{\kappa\alpha}\,\partial^\kappa f'{}_i + \frac{2}{3} t_3\,\partial_\kappa f^\lambda{}_\lambda\,\partial^\kappa f'{}_i + \frac{1}{3} t_2\,\omega_{i\theta\kappa}\,\partial^\kappa f'{}^\theta -$$
$$\frac{2}{3} t_2\,\omega_{i\kappa\theta}\,\partial^\kappa f'{}^\theta - \frac{1}{3} t_2\,\omega_{\theta i\kappa}\,\partial^\kappa f'{}^\theta + \frac{2}{3} t_3\,\omega_{i\alpha}{}^\alpha\,\partial^\kappa f'{}_\kappa +$$
$$\frac{2}{3} t_3\,\omega_{i\lambda}{}^\lambda\,\partial^\kappa f'{}_\kappa - \frac{1}{2} t_2\,\partial^{\alpha}f^\lambda{}_\kappa\,\partial^\kappa f_{\lambda\alpha} - \frac{1}{2} t_2\,\partial_\kappa f_\theta{}^\lambda\,\partial^\kappa f_\lambda{}^\theta +$$
$$\frac{1}{6} t_2\,\partial_\kappa f^\lambda{}_\theta\,\partial^\kappa f_\lambda{}^\theta + \frac{2}{3} t_3\,\partial^{\alpha}f^\lambda{}_\alpha\,\partial^\kappa f_{\lambda\kappa} + \frac{1}{3} r_2\,\partial_\kappa\omega^{\alpha\beta\theta}\,\partial_\theta\omega_{\alpha\beta\theta} +$$
$$\frac{2}{3} r_2\,\partial_\kappa\omega^{\theta\alpha\beta}\,\partial^\kappa\omega_{\alpha\beta\theta} - \frac{2}{3} r_2\,\partial^\beta\omega_i{}^{\alpha\lambda}\,\partial_\lambda\omega_{\alpha\beta}{}^i + \frac{2}{3} r_2\,\partial^\beta\omega_i{}^{\lambda\alpha}\,\partial_\lambda\omega_{\alpha\beta}{}^i -$$
$$4\,r_3\,\partial^\beta\omega_i{}^{\lambda\alpha}\,\partial_\lambda\omega_{\alpha\beta}{}^i - r_3\,\partial_\alpha\omega_\lambda{}^\theta\,\partial^\lambda\omega^\beta{}_\kappa + r_3\,\partial_\theta\omega_\lambda{}^\alpha{}_\alpha\,\partial^\lambda\omega^{\theta\kappa}{}_\kappa$$

Added source term: $\displaystyle \mathcal{L}\supset f^{\alpha\beta}\,\tau_{\alpha\beta} + \omega^{\alpha\beta\chi}\,\sigma_{\alpha\beta\chi}$

Particle content (bottom-left)

$J^P = 0^-$, $\vec{k}^\mu$

Massive particle	
Pole residue:	$-\dfrac{1}{r_2} > 0$
Polarisations:	1
Square mass:	$-\dfrac{t_2}{r_2} > 0$
Spin:	0
Parity:	Odd

Unitarity conditions

$r_2 < 0\ \&\&\ t_2 > 0$

(No massless particles)