Top circuit:

$i_{s,d}(t)$, R_s, $L_s' - M_{fs}$, $L_f - M_{fs}$, R_f, $i_f(t)$

$u_{s,d}(t)$, $\dot{\psi}_{s,d}(t)$, M_{fs}, $\dot{\psi}_f(t)$, $u_f(t)$

$-\omega_{r,el}\psi_{s,q}(t)$

Bottom circuit:

$i_{s,q}(t)$, R_s, L_s'

$u_{s,q}(t)$, $\dot{\psi}_{s,q}(t)$

$\omega_{r,el}\psi_{s,d}(t)$