



Diagram C can be derived from A through B, where A is the conceptual Hawksford error correction.

In diagram C it can be seen by inspection that:
 $V_{out}/V_{in} = K1/[S2+K1*S1*(1-1/K1)]$.

General Gcl closed-loop gain equation with $K1=K+e$, where e is the error of K1 departing from unity:

$V_{out}/V_{in} \text{ Gcl} = (1+e)/[S2+(1+e)*S1*(1-1/(1+e))]$
 The forward ol gain $G_{ol} = 1+e$
 Feedback factor $F_{fb} = S1*(1-1/(1+e))$

If $K1 = 1$ (ideal unity-gain forward block):
 $G_{cl} = 1/S2$
 $F_{fb} = 0$: there is zero feedback

If $K1 = 1+e$ ($e > 0$, $G_{ol} > G_{cl}$):
 Feedback factor is $S1*(e/(1+e))$:
 this is a positive number resulting in negative feedback

If $K1 = 1-e$ ($e > 0$, $G_{ol} < G_{cl}$):
 Feedback factor is $S1*(-e/(1-e))$:
 this is a negative number resulting in positive feedback

It is apparent that the fb factor depends on e, the error to be corrected, and S1, the error summer.

If $e > 0$, ($G_{ol} > 1$), the fb = negative to drive $G_{cl} \rightarrow 1$;
 If $e < 0$, ($G_{ol} < 1$), the fb = positive, again to drive $G_{cl} \rightarrow 1$.

The magnitude of S1 does impact the correction accuracy, but does not change the sign of the feedback.
 For $e < 0$, the positive fb does indeed increase G_{cl} , but as soon as G_{cl} would rise above 1, the fb becomes negative to decrease G_{cl} .
 Therefore, latch-up cannot occur.