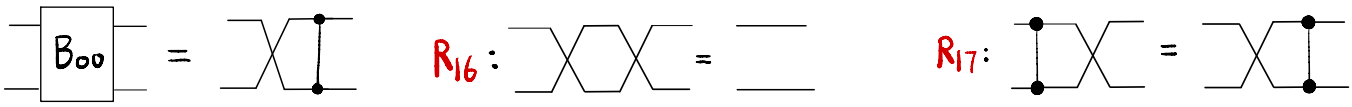
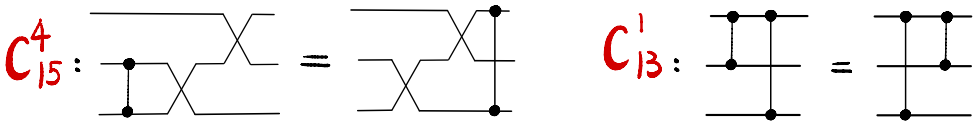
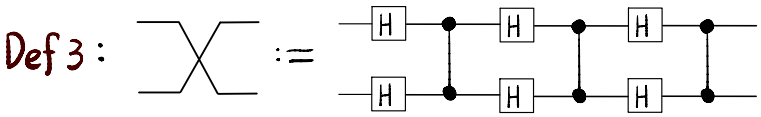
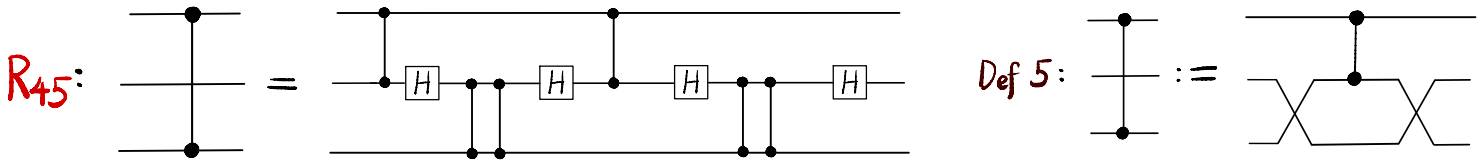
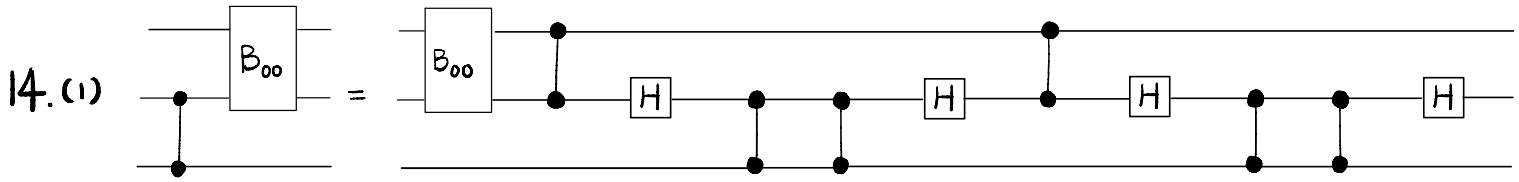




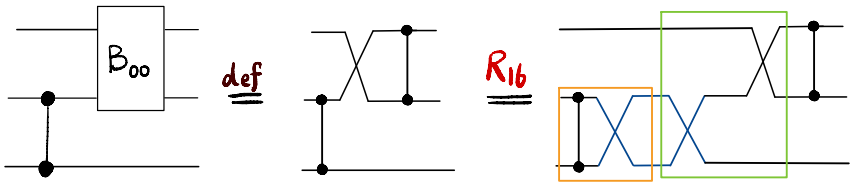


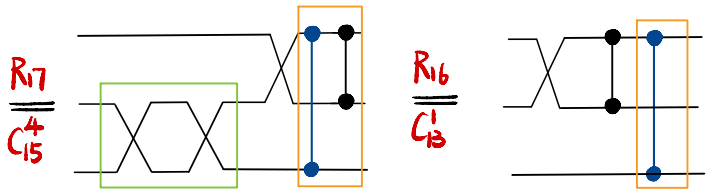


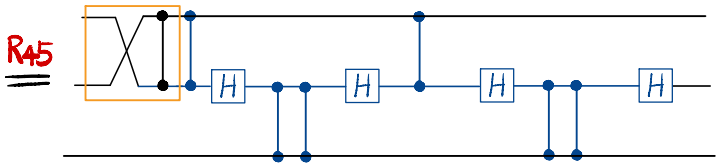
Lem 10 Def 3, Def 5, R_{16}, R_{17}, C_{13}, C_{15} & R_{45} imply

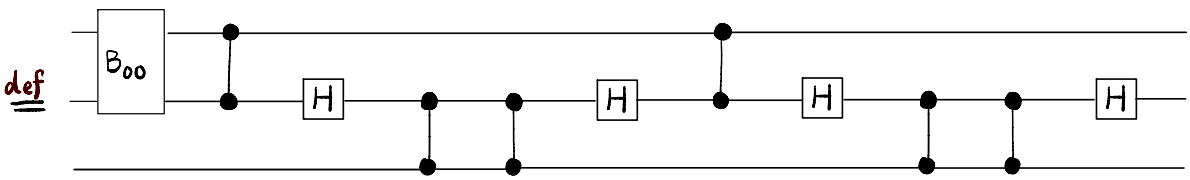


Proof: 14.(1).LHS :=

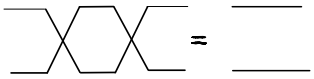
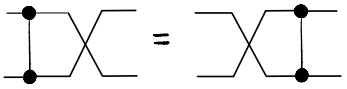
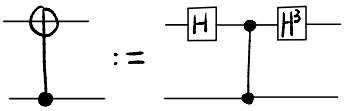


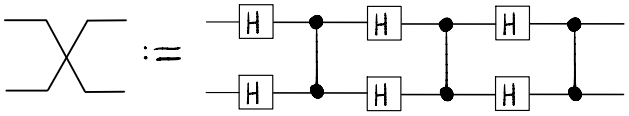
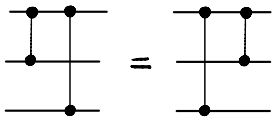


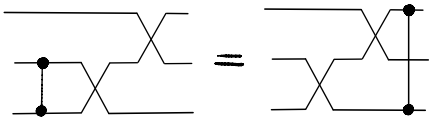
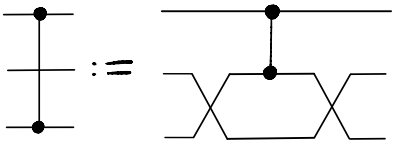




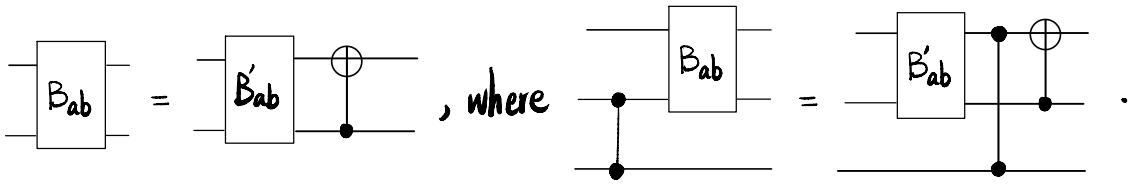
=: 14.(1).RHS

R_{16}:  R_{17}:  Def 2: 

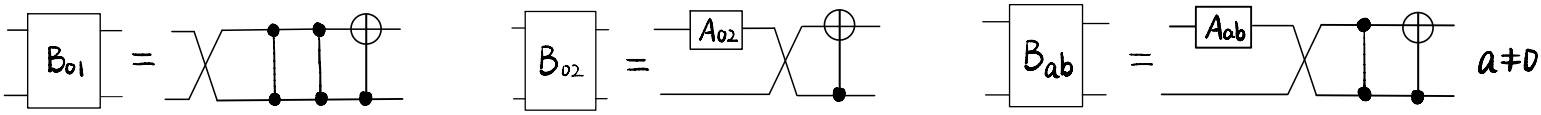
Def 3:  C^1_{13}: 

C^4_{15}:  Def 5: 

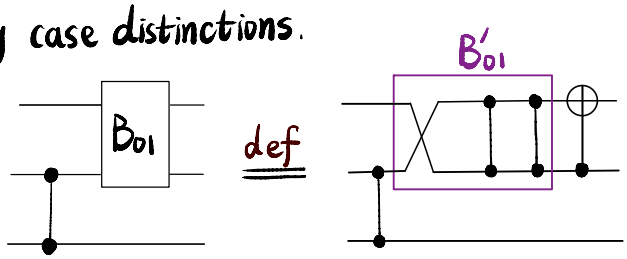
Lem 11 For $a,b \in \mathbb{Z}_3 \times \mathbb{Z}_3 \setminus \{(0,0)\}$, Def 2-3, Def 5, R_{16}, R_{17}, C_{13} & C_{15} imply

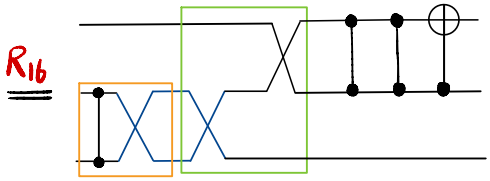


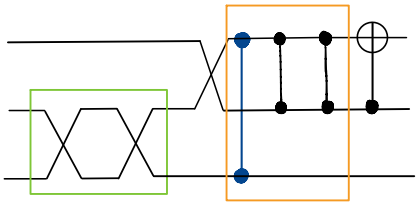
Proof: Recall that

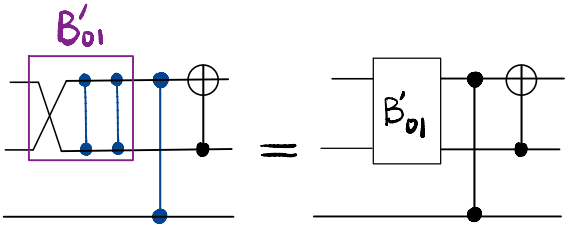


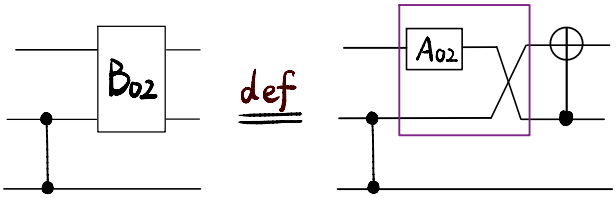
Proceed by case distinctions.

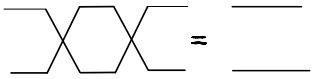
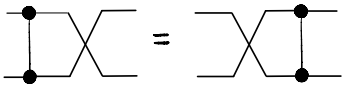
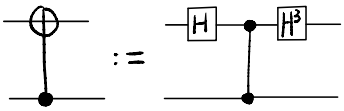
Case 1: 

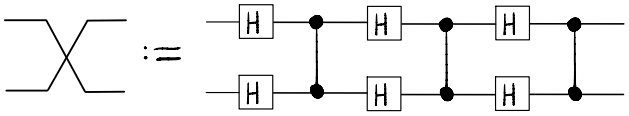
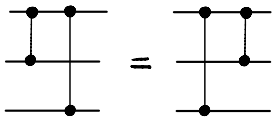
R_{16} 

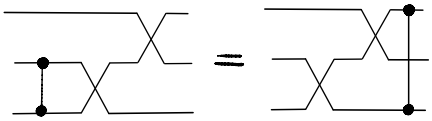
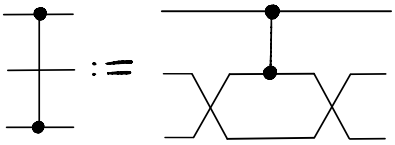
R_{17} C^4_{15} 

R_{16} C^1_{13} 

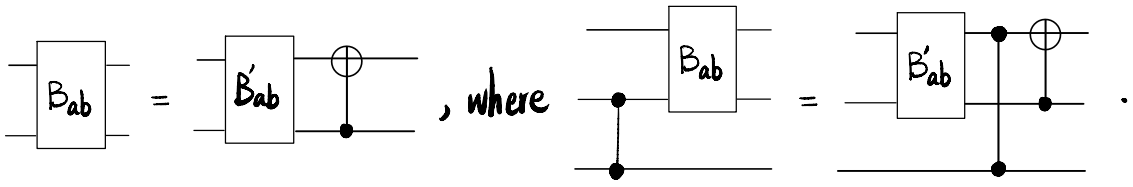
Case 2: 

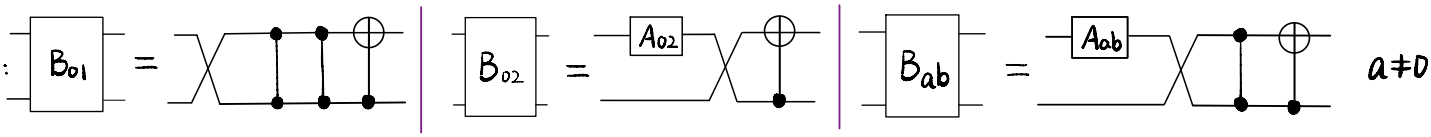
R_{16}:  R_{17}:  Def 2: 

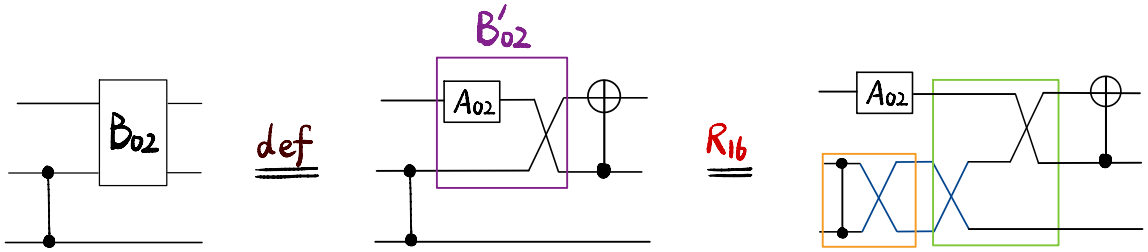
Def 3:  C^1_{13}: 

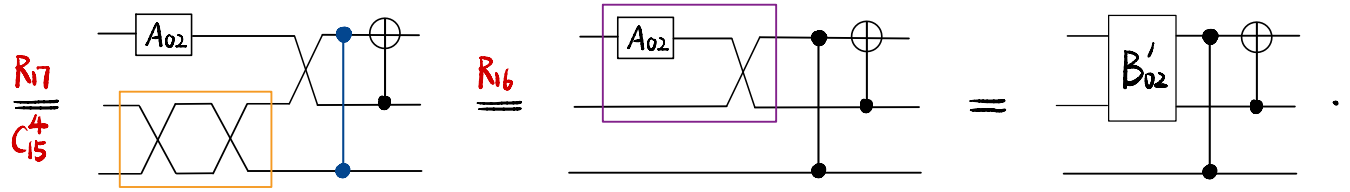
C^4_{15}:  Def 5: 

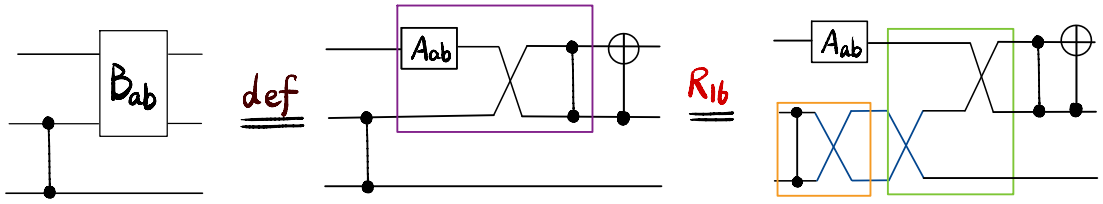
Lem 11 For $a,b \in \mathbb{Z}_3 \times \mathbb{Z}_3 \setminus \{(0,0)\}$, Def 2-3, Def 5, R_{16}, R_{17}, C_{13} & C_{15} imply

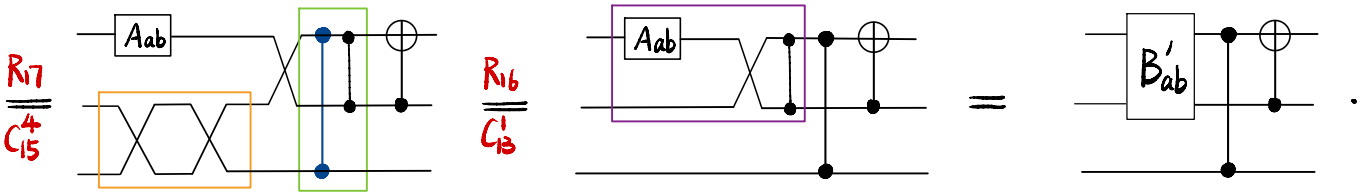


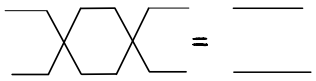
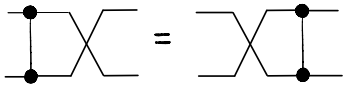
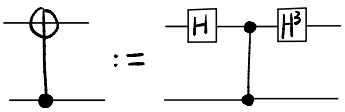
Proof cont: 

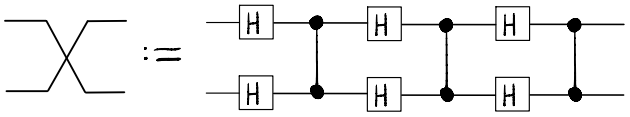
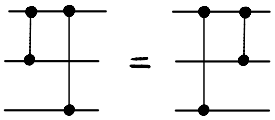
Case 2: 

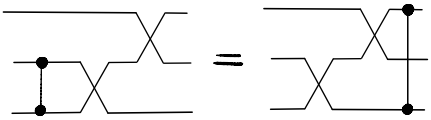
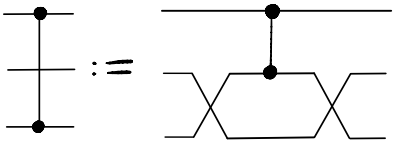


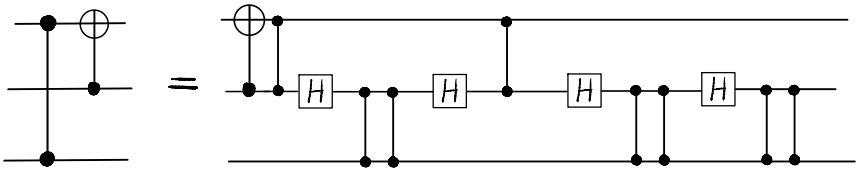
Case 3: $a \neq 0$ 



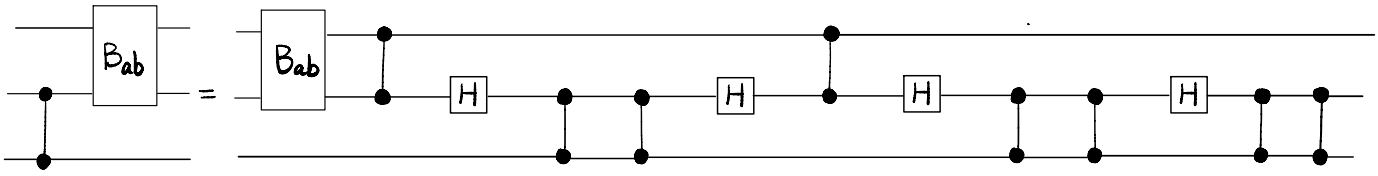
R_{16}:  R_{17}:  Def 2: 

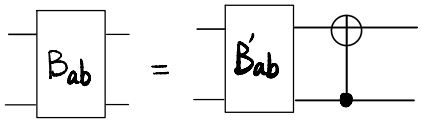
Def 3:  C^1_{13}: 

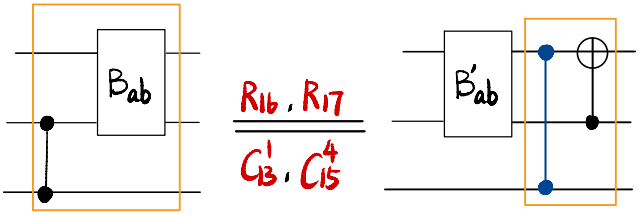
C^4_{15}:  Def 5: 

R_{46}: 

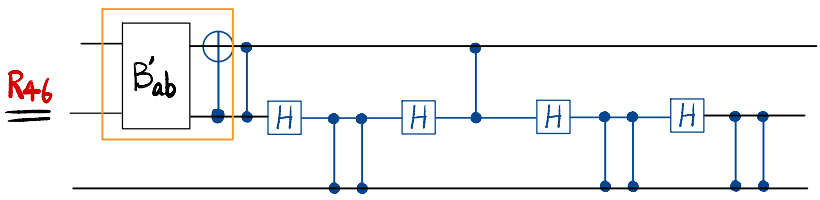
Lem 12 For $a,b \in \mathbb{Z}_3 \times \mathbb{Z}_3 \setminus \{(0,0)\}$, Def 2-3, Def 5, R_{16}, R_{17}, C_{13}, C_{15} & R_{46} imply

14.(2)-(9) 

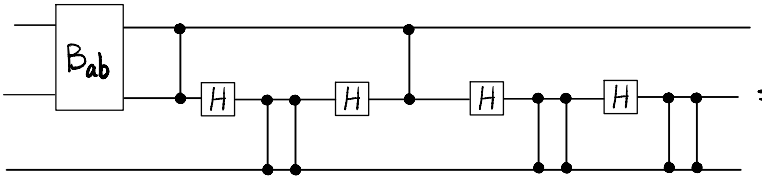
Proof: By Lem 11, for $a,b \in \mathbb{Z}_3 \times \mathbb{Z}_3 \setminus \{(0,0)\}$,  , and

14.(2)-(9).LHS := 

R_{16}, R_{17} / C^1_{13}, C^4_{15}



R_{46}



Lem 11

=: 14.(2)-(9).RHS.

∎