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## Quick instruction for a drive axis "cross change" HMC 400/500/600 machines

(Excluding Vision machines. Also, although the photos do not match the HMC 400 machine, the steps are the same)

In trouble shooting the drive system, it is sometimes necessary to do a "cross change" between two amplifiers and motors, to rule out either a bad set of motor and cables, or a bad drive amplifier.

!! Attention – This procedure is for service technicians only !! The drive has parts with dangerously high voltages that can hurt or kill a person !!

A "cross change" can be done between two single drives, and also between double drives, or on a single double drive. Depending on the axis suspected of causing the trouble, leave the Y-axis out of the change, if possible. *If the Y-axis is one of the suspect axes, support the Y-axis grinding head with a block of wood or a lifting jack*, so the head won't drop down.

- 1. Turn the machine completely off and wait a minimum 2 minutes before you start working on the drives
- 2. Take off the plastic covers on the drives you want to use for the cross change
- Swap the drive addresses with the little blue step switches. (For example A axis is 0 + 1 and X is 0 + 2. You can change the setting or swap the SERCOS cards – both will work)





4. Swap (cross) the I/O cables



5. Swap the personality cards (if they are not marked or labeled, use a sharpy to do so)



6. Swap (cross) the encoder cables



7. Swap (cross) the motor cables

- 8. Double check all connections, including on the drives left and right. Sometimes the green plugs come out or loose by wiggling the cable. The black fibre optic cables are building a loop between control and all drives. They do not to be swapped, but a check if they are all tight never hurts.
- 9. Turn the machine back on and let the drives boot up. If all drives show "bb" and there is no error on the screen, turn the drives on (with the feed rate step switch on 10%)
- 10. If the drives come on normally (AF), try to reference the machine with "Ref-All-Move" (10% max!!)
- 11. If the machine is referenced OK and all axes are in the start position, either run the warmup program or the program you used so far to provoke the fault.

If the machine fails again, check if the drive error moved to the other drive or stayed on the same amplifier.

If the error stayed on the same drive amplifier, then the drive amplifier has a problem

*If the error moved to the other drive amplifier, then the motor, cable, or personality card have a problem*