CONNECTING **MOTORS TO MECHANICS**

USE THIS CHECKLIST TO SAFELY BRING A MOTION SYSTEM ONLINE
WITHOUT CRASHING PRECISION MECHANICS

1. Determine the fit of the motor to the mechanics. Do not connect yet!

2. Hook up end-of-travel limit switches to controller.

3. Test limit switch operation by manually moving mechanics. Query controller for a change of state. If the controller faults when the stage is not on either limit, you may have the N.O./N.C logic of the sensors reversed.

4. Verify the motion control system is stable and controllable. For closed-loop systems, use conservative tuning settings.

5. Test the limit switch sensing direction by running the motor one way, manually moving the mechanics that direction, and see if motor stops when a limit is hit.

6. Adjust the limit switch deceleration in the controller, if this feature is available. Deceleration is based on available torque of the motor, friction and inertia.

7. Calculate the inward placement of limit switches based on max. motor velocity & deceleration. Max motor velocity is based on runaway condition, not max. programmed.

8. Learn how to stop the motion in case of a runaway or mistaken command. Practice it!

9. Set the current limit in the drive/amplifier just high enough to move the system.

10. Activate the "off upon error" feature in controller if available. Test.

11. Manually move the mechanics to the middle of the overall operating range.

12. Hook up the mechanics to the motor. Tighten to specs.

13. Verify the commanded move direction is correct by commanding a small move at a slow velocity. Measure actual move length to verify the scaling is correct.

14. Command slow motion toward each limit. Ensure it stops when it hits the limit switch.

15. Make sure limit switches are activated in the startup routine of the motion program.

16. Turn up current limits in drive/amplifier to final operational levels. If there are no limit switches, keep the current limits low to reduce the energy of a crash.

17. For closed-loop systems, re-tune the system to compensate for the added inertia and new harmonics of the load

SKIP STEPS AT YOUR OWN RISK!