

Startup

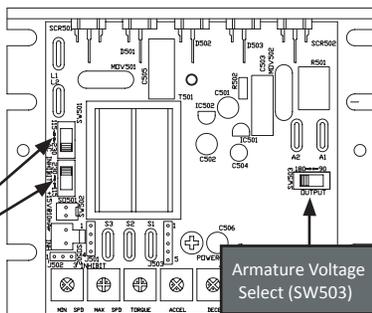
SELECT SWITCHES

Input Voltage Select (SW501, SW502)

Set the voltage switch SW501 and SW502 to either 115V or 230V to match the AC line voltage.

Armature Voltage Select (SW503)

Set the voltage switch SW503 to either 90V or 180V to match the maximum armature voltage.



Input Voltage Select (SW501, SW502)

Armature Voltage Select (SW503)

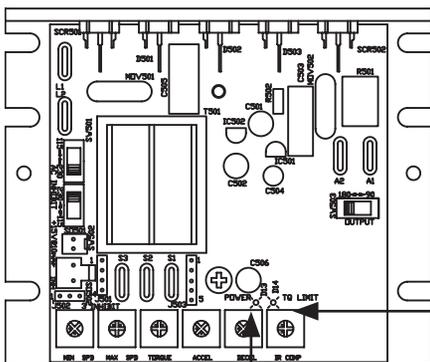
STARTUP

- Verify that no foreign conductive material is present on the printed circuit board.
- Ensure that all switches and jumpers are properly set.

1. Turn the speed adjust potentiometer to "0" (full CCW).
2. Set the POWER switch to the ON position.
4. Slowly advance the speed adjust potentiometer clockwise (CW). The motor slowly accelerates as the potentiometer is turned CW. Continue until the desired speed is reached.
5. Set the POWER switch to the OFF position to coast the motor to a stop.

LEDs

Current Limit (TQ LIMIT): Red LED lights whenever the drive reaches current limit.
Power (POWER): Green LED lights whenever AC line voltage is applied to the drive.



Current Limit LED

Power LED

Operation

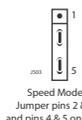
MODES

Speed (Voltage) Mode

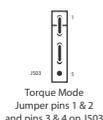
In speed mode, the external potentiometer adjusts the speed (voltage) of the motor. The on-board MAX SPD trim pot sets the maximum speed of the motor. The on-board TORQUE trim pot sets the maximum torque available. The drive comes factory calibrated for speed mode. To run the drive in Speed Mode, jumper pins 2 & 3 and pins 4 & 5 on J503.

Torque (Current) Mode

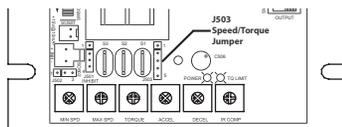
In torque mode, the external potentiometer adjusts the torque (current) of the motor. The on-board MAX SPD trim pot sets the maximum torque available. The on-board TORQUE trim pot sets the maximum speed of the motor. The drive comes factory calibrated for speed mode. To run the drive in Torque Mode, jumper pins 1 & 2 and pins 3 & 4 on J503.



Speed Mode
Jumper pins 2 & 3
and pins 4 & 5 on J503



Torque Mode
Jumper pins 1 & 2
and pins 3 & 4 on J503



DECELERATING & STOPPING

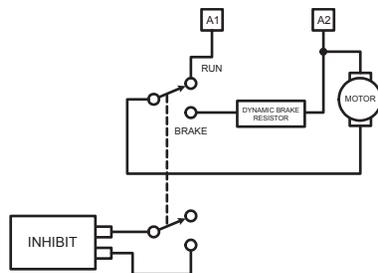
Decelerate to Minimum Speed or Zero Speed

Use the INHIBIT terminals to coast the motor to minimum speed or to zero speed. Jumper J501 determines whether the inhibit is set for normally open (jumper pins 1 and 2, pins 3 and 4) or normally closed (jumper pins 2 and 3). Jumper J502 determines whether the inhibit will decel to minimum speed (jumper pins 1 and 2) or to zero speed (jumper pins 2 and 3). The inhibit works in both speed mode and torque mode.

CONFIGURATION	DRIVE RESPONSE	CONFIGURATION	DRIVE RESPONSE
	INHIBIT MIN MODE INHIBITS TO MINIMUM SPEED WHEN INHIBIT TERMINALS ARE SHORTED		INVERT INHIBIT MIN MODE INHIBITS TO MINIMUM SPEED WHEN INHIBIT TERMINALS ARE OPENED
	INHIBIT ZERO MODE INHIBITS TO ZERO SPEED WHEN INHIBIT TERMINALS ARE SHORTED		INVERT INHIBIT ZERO MODE INHIBITS TO ZERO SPEED WHEN INHIBIT TERMINALS ARE OPENED

Decelerate to Zero Speed (Dynamic Brake)

Dynamic braking may be used to rapidly stop a motor. The inhibit must be set for "INHIBIT ZERO MODE". For the RUN/BRAKE switch, use a two pole, two position switch rated for at least the armature voltage rating and 150% of the armature current rating. For the dynamic brake resistor, use a 40 watt minimum, high power, wirewound resistor. Sizing the dynamic brake resistor depends on load inertia, motor voltage, and braking time. Use a lower-value, higher-wattage dynamic brake resistor to stop a motor more rapidly. Recommended values are 15 ohms for a 90 VDC motor and 30 ohms for 180 VDC motor.



REVERSING

Reversing with a Dynamic Brake

A dynamic brake may be used when reversing the motor direction. The inhibit must be set for "INHIBIT ZERO MODE". Use a three pole, three position switch rated for at least the armature voltage rating and 150% of the armature current rating. For the dynamic brake resistor, use a 40 watt minimum, high power, wirewound resistor. Sizing the dynamic brake resistor depends on load inertia, motor voltage, and braking time. Use a lower-value, higher-wattage dynamic brake resistor to stop a motor more rapidly. Recommended values are 15 ohms for a 90 VDC motor and 30 ohms for 180 VDC motor.

The motor must come to a complete stop before changing directions.

Calibration

Minimum Speed (MIN SPD): The MIN SPD setting determines the minimum motor speed when the speed adjust potentiometer is set for minimum speed. It is factory set for zero speed. To calibrate the MIN SPD:

1. Set the MIN SPD trim pot full CCW.
2. Set the speed adjust potentiometer for minimum speed.
3. Adjust the MIN SPD trim pot until the desired minimum speed is reached or is just at the threshold of rotation.

Maximum Speed (MAX SPD): The MAX SPD setting determines the maximum motor speed when the speed adjust potentiometer is set for maximum speed. To calibrate the MAX SPD:

1. Set the MAX SPD trim pot full CCW.
2. Set the speed adjust potentiometer for maximum speed.
3. Adjust the MAX SPD trim pot until the desired maximum speed is reached.

Check the MIN SPD and MAX SPD adjustments after recalibrating to verify that the motor runs at the desired minimum and maximum speed.

Torque (TORQUE): The TORQUE setting determines the maximum torque for accelerating and driving the motor. To calibrate the TORQUE:

1. With the power disconnected from the drive, connect a DC ammeter in series with the armature.
2. Set the TORQUE trim pot to minimum (full CCW).
3. Set the speed adjust potentiometer to maximum speed (full CW).
4. Carefully lock the motor armature. Be sure that the motor is firmly mounted.
5. Apply line power. The motor should be stopped.
6. Slowly adjust the TORQUE trim pot CW until the armature current is 150% of motor rated armature current. **Continuous operation beyond this rating may damage the motor.**
7. Turn the speed adjust potentiometer CCW.
8. Remove line power.
9. Remove the stall from the motor.
10. Remove the ammeter in series with the motor armature if it is no longer needed.

IR Compensation (IR COMP): The IR COMP setting determines the degree to which motor speed is held constant as the motor load changes. To calibrate the IR COMP:

1. Set the IR COMP trim pot full CCW.
2. Increase the speed adjust potentiometer until the motor runs at midspeed without load. A handheld tachometer may be used to measure motor speed.
3. Load the motor armature to its full load armature current rating. The motor should slow down.
4. While keeping the load on the motor, rotate the IR COMP trim pot until the motor runs at the speed measured in step 2. If the motor oscillates (overcompensation), the IR COMP trim pot may be set too high (CW). Turn the IR COMP trim pot CCW to stabilize the motor.
5. Unload the motor.

Acceleration (ACCEL): The ACCEL setting determines the time the motor takes to ramp to a higher speed. ACCEL is factory set for the shortest acceleration time (full CCW). To calibrate the ACCEL:

1. Set the speed adjust potentiometer for minimum speed.
2. Set the speed adjust potentiometer for maximum speed. Measure the time it takes the motor to go from minimum speed to maximum speed.
3. If the time measured in step 2 is not the desired acceleration time, turn the ACCEL trim pot CW for a longer acceleration time, or CCW for a shorter acceleration time. Repeat steps 1 through 3 until the acceleration time is correct.

Deceleration (DECEL): The DECEL setting determines the time the motor takes to ramp to a lower speed. DECEL is factory set for the shortest deceleration time (full CCW). To calibrate the DECEL:

1. Set the speed adjust potentiometer for maximum speed.
2. Set the speed adjust potentiometer for minimum speed. Measure the time it takes the motor to go from maximum speed to minimum speed.
3. If the time measured in step 2 is not the desired deceleration time, turn the DECEL trim pot CW for a longer deceleration time, or CCW for a shorter deceleration time. Repeat steps 1 through 3 until the deceleration time is correct.

