

INSTRUCTION MANUAL

ACCUMIX SCR CONTROL

MODEL NO. MM23401A
MANUAL NO. 05-07501



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SPECIFICATIONS

Input Voltage	115/230 VAC, 50-60 Hertz
Armature Voltage	0-90 VDC (115 VAC input) 0-180 VDC (230 VAC input)
Form Factor	1.37 at base speed
Field Voltage	50/100 VDC (115 VAC input) 100/200 VDC (230 VAC input)
Field Current	1 Amp DC (maximum)
Load Regulation	1% base speed or better
Ambient Temp. Range	10°C-40°C

115 VAC INPUT	230 VAC INPUT
Max. DC Amps	10.0
Max. AC Amps	13.0
H.P.	1
	2

INSTALLATION

WARNING! Improper installation practices can cause equipment malfunction or serious physical injury. This equipment must be installed, adjusted, and serviced by qualified electrical maintenance personnel familiar with the construction and operation of the equipment and the hazards involved. It is the responsibility of the equipment manufacturer or individual installing the control to take diligent care during installation. Compliance with the National Electrical Code, any and all sound pertinent local electrical and safety codes, and the Occupational Safety and Health Act (OSHA) is required.

All exposed points on the control circuit board are HOT with respect to earth ground. The chance of electric shocks, fires, or explosion can be reduced by giving proper consideration to grounding, thermal and over-current protection, type of enclosure, and maintenance procedures.

These controls are NOT Fail-Safe. Control failure may cause the motor to run at full speed. The Speed Adjust Pot and the Inhibit Circuit will be ineffective in these situations. BE SURE to provide an independent and positive means for disconnecting incoming AC power under emergency conditions.

GENERAL CONSIDERATIONS

Install in an area protected from dirt, moisture, and accidental contact. Provide adequate clearance for connection of wiring and adjustment of the controls. Do not mount the controls near other heat-producing objects or in areas subject to excessive cold or vibration. Allow for adequate ventilation to maintain the ambient temperature within 10°-40°C.

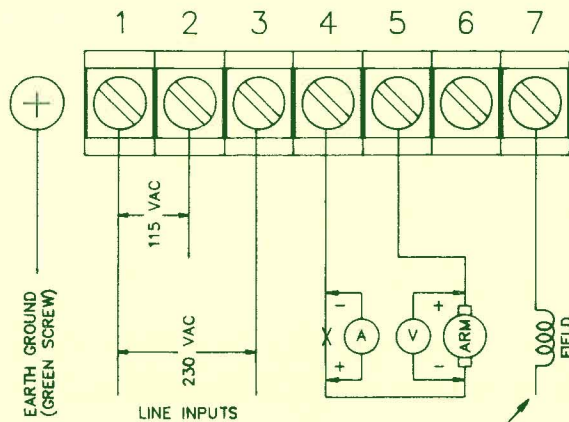
INPUT VOLTAGE SELECTION

Be sure that the input voltage selection switches are in the correct position for the AC line voltage being used. They are set at the factory for 230 VAC.

CONNECTIONS

The AC line, armature, and field circuits should be wired with 16 Ga or larger stranded wire.

Connections are to screw-type terminal blocks, located inside the control case.



FOR 50 (100) VOLT FIELD CONNECT TO TERMINAL 1.
FOR 100 (200) VOLT FIELD CONNECT TO TERMINAL 6.

LINE STARTING AND LINE STOPPING

When power is removed, the motor will coast to a stop. When power is re-applied, the motor will return to the set speed at a rate determined by the setting of the Accel Adjustment. Once power has been removed, it should not be re-applied for at least 10 seconds. Times shorter than this will not guarantee that the Acceleration Circuit will take effect when the motor is restarted. Refer to "OPERATION" Instructions.

FUSING

The National Electrical Code requires that a separate fused disconnect or circuit breaker be installed on the incoming AC power line. A circuit breaker or normal-blowing fuse of not more than 15 Amperes should be inserted in the HOT AC line for 115 VAC operation and in BOTH AC lines for 230 VAC operation. A breaker or fuse of 150% of motor load should be used to protect the motor.

RECOMMENDED LINE FUSE SIZE

HP	1/4	1/3	1/2	3/4	1	1-1/2	2
115 VAC	5 AMP	6 A	8 A	10 A	15 A	N/A	N/A
230 VAC	3 AMP	3 A	4 A	6 A	8 A	10 A	15 A

OPERATION

Before operating the control, carefully check that all connections are correct. Also check that there are no wire chips or other foreign material on the printed circuit board. Make sure that the Input Voltage Selector switches are set for the correct voltage.

FIRST TIME STARTUP

Turn the Speed Adjust Knob to zero, apply AC power to the unit and set the ON/OFF switch to ON.

Slowly advance the Speed Adjust Pot towards maximum and verify that the motor starts slowly and increases speed in accordance with the potentiometer setting. If the control does not behave as expected, disconnect the AC power immediately and refer to the Troubleshooting Section of this manual.

SWITCHING

The ON/OFF toggle switch starts and stops motor at any speed setting. When switched OFF, the motor coasts to a stop.

ADJUSTMENTS

All controls are Factory calibrated for maximum horsepower. The following procedures are included to permit adjustment of the units without the use of any instrumentation. The results obtained will be satisfactory in most applications. If these procedures prove inadequate, ask for calibration instructions.

All adjustments increase with clockwise rotation and decrease with counter-clockwise rotation. The adjustments are also identified on the printed circuit board. Be sure to use a non-metallic screwdriver when making adjustments to avoid shorting out the control circuitry.

MIN SPEED ADJUSTMENT

This sets the speed which the motor will attain when the Speed Adjust Pot is at minimum or when the Inhibit Circuit is closed. It is set at the factory to provide a minimum speed of zero. To adjust for some other speed, set the Speed Adjust Pot to full CCW and advance the Min Speed Adjustment until the desired speed is achieved. The range is 0% to approximately 50% of the controls rated output voltage. This adjustment should be made before setting the Max Speed Adjustment as there is some interaction between the settings.

MAX SPEED ADJUSTMENT

This sets the speed which the motor will attain when the Speed Adjust Pot is at maximum. It is set at the factory for motor related speed. To set a different maximum speed, turn the Speed Adjust Pot to maximum and adjust the Max Speed Adjustment to achieve the desired speed. The range is approximately 50% to 100% of the controls related output voltage.

IR COMP ADJUSTMENT

This controls the degree to which the speed control compensates for changes in motor load. It is factory-set for maximum horsepower. If your application requires better regulation, you may adjust this setting until the speed remains essentially constant. If you increase the regulation too much, the speed of the motor will become unstable. Turn the IR Comp Adjustment CCW until the motor just stabilizes. This will be near the optimum setting.

TORQUE ADJUSTMENT

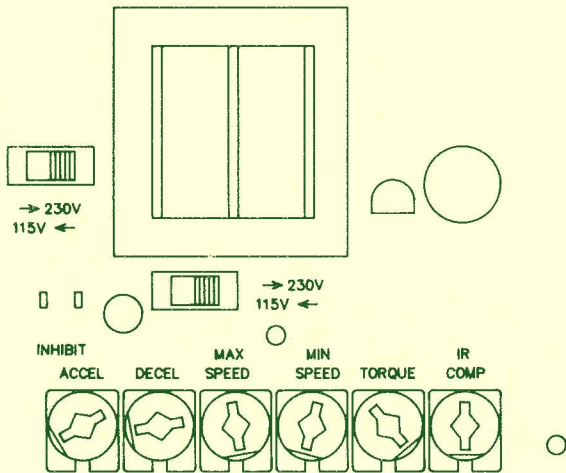
This sets the maximum current which the control will deliver to the motor. It is set at the factory to 150% of the rated output current to protect the control. The adjustment should not be advanced beyond this factory setting. The Torque Adjustment may be set to a lower value to protect the motor from overload.

ACCEL ADJUSTMENT

This sets the time the control will take to ramp to higher output voltage. The time is adjustable from 0.5 to 20 seconds from zero to full speed. Note that high-inertia loads may take a longer time to come up to speed.

DECEL ADJUSTMENT

This functions in a manner similar to that of the Accel Adjustment except that it sets the time to change to a lower speed.



VOLTAGE SELECT SWITCHES and TRIM POT LOCATIONS

TROUBLE SHOOTING

WARNING! Dangerous Voltages exist at various points on the speed control. Whenever possible, disconnect the AC Power to the unit while attempting troubleshooting and repair procedures. Contact with live circuitry could cause serious or fatal injury. When the power must be applied during a procedure, use extreme caution when working on the unit.

Before attempting any of the troubleshooting procedures below, do the following:

1. Remove AC power from the unit.
2. Check the control for damaged or charred components.
3. Check that no wire chips or other foreign material have become lodged in the printed circuit board.
4. Check that all connections to the control are correct and in good condition. Check for short circuits and grounds on all wiring.

If the above items check OK, proceed with the following troubleshooting procedures.

MOTOR DOES NOT RUN

1. Check that the control is receiving AC line power. Check any fuses or circuit breakers in the power line. Make sure that the main power switch is on and that the Speed Adjust Pot is not set to 0.
2. Make sure that any Inhibit circuitry connected to the control has not disabled it.
3. The control may be in Current Limit. Check the motor and load to make sure that the motor is not jammed. It may be necessary to readjust the Torque Adjustment.
4. Speed Adjust Pot may be open.

FUSES OR CIRCUIT BREAKERS BLOW

1. Recheck all wiring for shorts, grounds, and misconnections to the control and motor.
2. Recheck that the control ratings match the motor nameplate ratings.
3. The motor may be overloaded. Check that the motor load is not jammed or motor movement otherwise restricted.
4. Check that the fuse or circuit breaker is large enough for the size of motor being used.

MOTOR RUNS TOO FAST AT MAX SPEED

1. If a shunt-wound motor is being used, check that the field connections are correct and secure.
2. The Min or Max Speed Adjustment pots may be set too high. Readjust as necessary.
3. Check Voltage Select Switch position settings.

MOTOR WON'T STOP AT ZERO SPEED SETTING

1. The Min Speed Adjustment may be set incorrectly.

MOTOR RUNS IN REVERSE

1. Reverse connections to the motor armature.

MOTOR SLOWS DOWN UNDER LOAD

1. The control may be in Current Limit. Check that motor is not overloaded.
2. The IR Comp Adjustment may be set too low. Readjust as necessary.

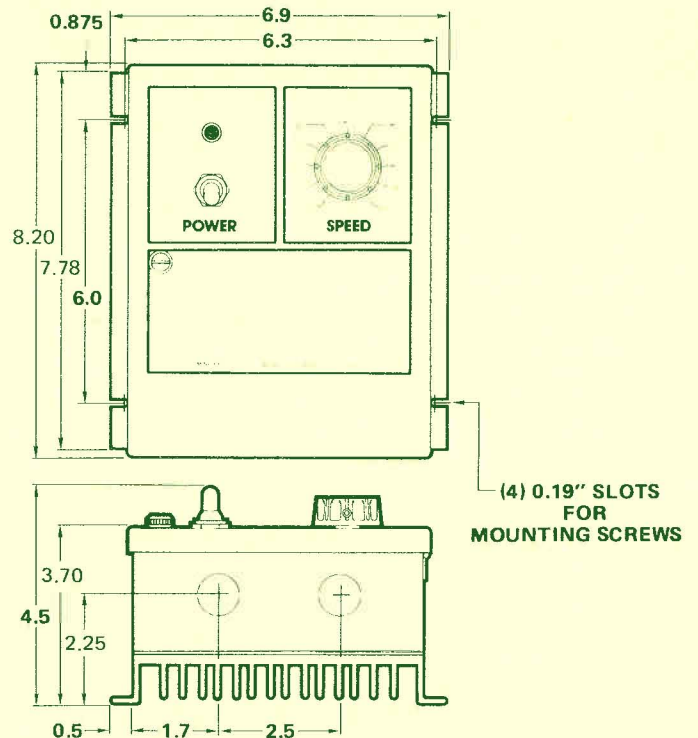
MOTOR SPEED IS UNSTABLE UNDER LOAD

1. The IR Comp Adjustment may be set too high. Reduce the setting and see if the speed stabilizes.

MOTOR RUNS ONLY AT FULL SPEED

1. Speed Adjust Pot may be open.

DIMENSIONAL DATA



All Dimensions in Inches

WIRING DIAGRAM

