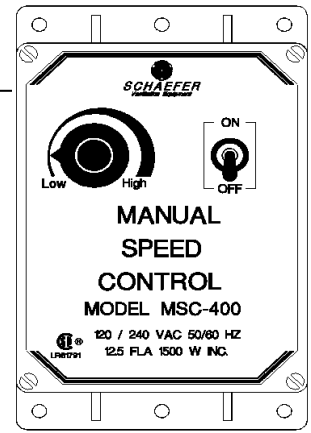


MSC-400 Manual Speed Control user manual



The Manual Speed Control (MSC-400) is a simple and effective way to control fan motors. The MSC-400 allows you to manually adjust the speed of ventilation and heat exchanger equipment. The MSC-400 can also be used as a light dimmer for brooder heat lamps and can power up to five 250-watt lamps.

Features

- ◆ One variable stage output
- ◆ ON/OFF switch
- ◆ Adjustable HIGH/LOW settings
- ◆ Overload protection fuse
- ◆ Rugged enclosure (corrosion resistant, water resistant, and fire retardant)
- ◆ CSA approval
- ◆ Two-year limited warranty

Electrical ratings

- ◆ Input: 120/230 VAC, 60 Hz
- ◆ Variable: 12.5 A at 120/230 VAC, general-purpose (resistive)
9 FLA at 120/230 VAC, PSC motor
1/2 HP at 120 VAC, 1 HP at 230 VAC, PSC motor
1500 W tungsten at 120 VAC
- ◆ Fuse: 15 A, 250 VAC ABC-type ceramic

The MSC-400 is designed for high current and is too strong for small motors. The MSC-400 might not operate properly when running fan motors with a very inductive power factor and that draw less than 0.5 A.

To test for this problem, connect the control to the motor and adjust the control from minimum to maximum. If the motor jerks or locks during any part of the range of operation, the current draw is too low.



Adding more motors in parallel to increase the current draw will solve the problem. If this is not a viable solution, an 8.5 A version (MSC-400-8.5) is available from your dealer.

Variable speed fan motors can draw up to 30% more current at reduced speeds than maximum speed. Fan motor specifications show current draw at maximum speed. Current over 12.5 A will cause overheating and eventual failure of the MSC-400 control. Check current requirements for the fan motor by either measuring current draw at all speeds or consulting the dealer for information about that fan.

Fill out the information below to help verify that you do not exceed the electrical ratings of the MSC-400.

Fans	A Max. current draw per fan	B Number of fans	A × B = Total current draw
Make _____			
Model _____			
Voltage rating _____			
Power factor _____			
Lamps	C Watts per lamp	D Number of lamps	C × D ÷ 120 V = Total current draw

Installing the MSC-400



The Manual Speed Control must be installed by a qualified electrician.

Before installing or servicing the Manual Speed Control, switch OFF the power supply at the source.

Install the Manual Speed Control and all equipment connected to it according to local electrical codes.



Mount the enclosures on a sheltered, vertical surface, with the electrical knockouts facing down.

Use a screwdriver to tighten the screws in the enclosures. Do not use a drill or over tighten the screws; this can crack the enclosures and ruin the watertight seal.

Use the electrical knockouts for bringing wires or cables into or out of the enclosures. Use watertight strain reliefs or conduit connectors at all cable-entry points.

Do not make additional holes in the enclosures; this can damage the watertight seal or control components and void the warranty.

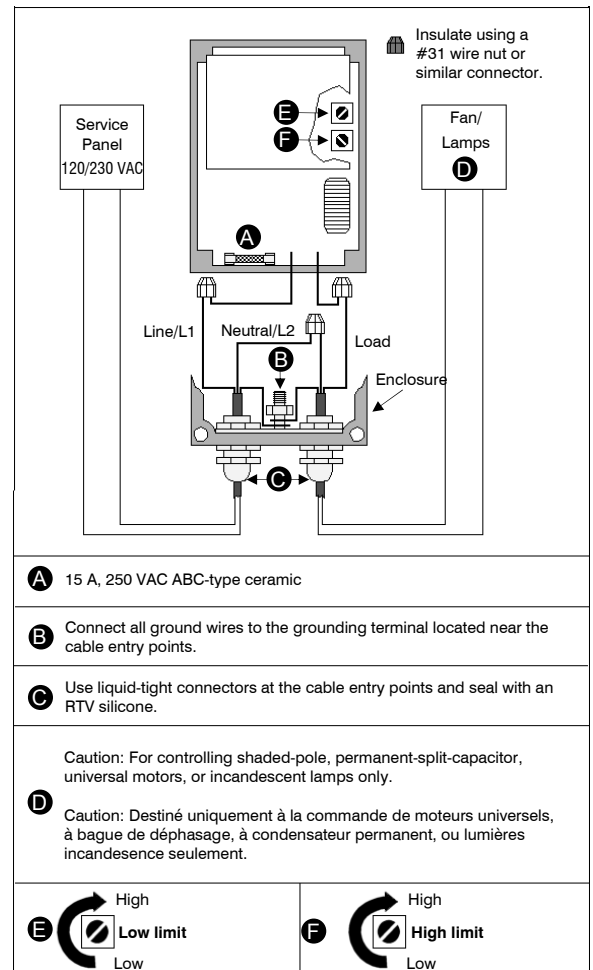
Only permanent split capacitor motors appropriate for variable speed control, or shaded pole motors, can be used on the MSC-400.

1. Mount the unit on a sheltered, vertical surface, with the electrical knockouts facing down.
2. Before removing electrical knockouts, remove the cover to prevent damaging the control.
3. Use watertight strain reliefs or conduit connectors at all cable entry points.
4. Connect the wires as shown.
5. Fasten the cover to the base of the control.

Operation

The MSC-400 is set at the factory for use with 230 VAC variable speed fans. To optimize the MSC-400 for 120 VAC variable speed fans, 120 VAC lamps, or a particular fan, see **Setting the high/low limits** on page 3.

To use the MSC-400, place the power switch in the **ON** position and then adjust the control knob for the desired speed or output.



Setting the high/low limits

The factory settings for the low and high limits will adequately control most 230 VAC variable speed fans. You can adjust the low and high limits to work best with your particular fan motor or incandescent lamps. See sections **E** and **F** of the drawing on page 1 for locations. Note that **E** is VR2 and **F** is VR3 on the circuit board.

The **low limit** sets the minimum speed of the fan, or intensity of the lamps, when the control knob is set to Low. The limit can also be set so the fan or lamps are off when the control knob is at Low.

The **high limit** adjusts the control to work with motors of different power factors and sets the maximum speed of the fan, or intensity of the lamps, when the control knob is at High.

Setting the limits for 120/230 VAC fans

1. Turn the control knob on the cover to High and then adjust the HIGH LIMIT trimmer clockwise to increase fan speed, counter-clockwise to reduce fan speed. If the fan begins to growl or rotate slowly during this step, slowly turn the trimmer counter-clockwise until the fan is running smoothly. You may need to turn the trimmer fully counter-clockwise to regain control of the fan.
2. Turn the control knob to Low and then adjust the LOW LIMIT trimmer clockwise to increase fan speed, counter-clockwise to reduce fan speed.

Setting the limits for 120 VAC lamps

1. Turn the control knob on the cover to High and then adjust the HIGH LIMIT trimmer clockwise to increase lamp intensity, counter-clockwise to decrease lamp intensity.
2. Turn the control knob to Low and then adjust the LOW LIMIT clockwise to increase lamp intensity, counter-clockwise to decrease lamp intensity. Turn the trimmer fully counter-clockwise to turn the lamps off at this setting.

Maintaining the MSC-400

Proper care and maintenance will help your MSC-400 last longer. To prevent damage to the control, perform the following steps after the first two weeks of operation, and once a year after that.

1. Switch off the power to the control.
2. Remove the cover and check inside for moisture. If there is any moisture, wipe it away using a dry cloth.
3. Check all cable entry points to make sure they are properly sealed. If they are not properly sealed, apply silicone sealant around the entry points.



If you need to seal the enclosure, use a sealant that is labelled as 'non-corrosive', 'electronics grade', or 'neutral cure', such as GE Silicone RTV6780B, RTV 142, or RTV 162.

Do not use a sealant that is labelled as 'acetic acid cure' or 'acetoxycure'. These sealants release acetic acid while curing, which can damage the control and will void the warranty.

4. Check all wires to make sure they are properly connected and that they are in good condition.
5. Fasten the cover to the enclosure and then switch on the power to the control.

Cleaning the MSC-400

To clean the MSC-400, wipe the surface with a damp cloth.



Be careful when washing the room using a high-pressure washer. DO NOT spray the control using a high-pressure washer, this can damage the control and will void the warranty.

Evidence of moisture damage inside the control will void the warranty.

Limited warranty

This warranty applies only to the Schaefer Fan Co. Inc. (Schaefer) Manual Speed Control (MSC-400). If you need warranty service, return the product and original proof of purchase to your dealer.

Schaefer warrants the MSC-400 subject to the following terms and conditions.

This warranty is valid only to the original purchaser of the product, for two years from the manufacturing date. The manufacturing date is stated in the first eight digits of the serial number in the form year-month-day.

Schaefer hereby warrants that should this product fail because of improper workmanship, Schaefer will repair the unit, effecting all necessary parts replacements without charge for either parts or labor.

Conditions

- ◇ Installation must be done according to Schaefer's enclosed installation instructions.
- ◇ The product must not have been previously altered, modified, or repaired by anyone other than Schaefer.
- ◇ The product must not have been involved in an accident, misused, abused, or operated or installed contrary to the instructions in our user and/or installation manuals. Schaefer's opinion about these items is final.
- ◇ The person requesting warranty service must be the original purchaser of the unit, and provide proof of purchase upon request.
- ◇ All transportation charges for products submitted for warranty must be paid by the purchaser.

Except to the extent prohibited by applicable law, no other warranties, whether expressed or implied, including warranties of merchantability and fitness for a particular purpose, shall apply to this product. Any implied warranties are excluded.

Schaefer is not liable for consequential damages caused by this product.

Schaefer does not assume or authorize any representatives, or other people, to assume any obligations or liabilities, other than those specifically stated in this warranty.

Schaefer reserves the right to improve or alter the MSC-400 without notice.

Schaefer controls are designed and manufactured to provide reliable performance, but they are not guaranteed to be 100 percent free of defects. Even reliable products can experience occasional failures and the user should recognize this possibility.

If Schaefer products are used in a life-support ventilation system where failure could result in loss or injury, the user should provide adequate back up ventilation, supplementary natural ventilation, or an independent failure-alarm system. The user's lack of such precautions acknowledges their willingness to accept the risk of such loss or injury.

