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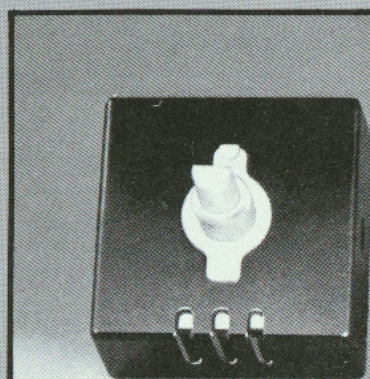
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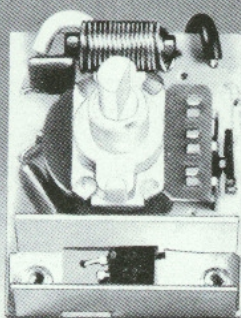
"The Right Control  
for Your Application"

DATA SHEET D-157

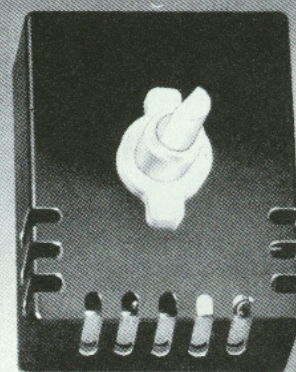
# KBMC and KBMS Variable Speed **Solid State** AC Motor Controls



KBMS Series Cased  
1.6 & 3.0 Amps  
120 V & 240 VAC, 50/60 Hz



KBMC Series Uncased  
3.0 Amps  
120 V & 240 VAC, 50/60 Hz



KBMC Series Cased  
2.5 & 4.0 Amps  
120 V & 240 VAC, 50/60 Hz

## —NEW EXPANDED LINE—

Designed for Speed Control  
of Shaded Pole, AC/DC and Permanent Split  
Capacitor (PSC) Motors

### AVAILABLE FEATURES

- Flame Retardant ABS Enclosure
- High-Gain Radio Noise Filter
- Minimum Speed Trimpot
- On/Off Rotary Line Switch
- Kit for Wall Box Mounting
- Lever-Trol™ Option

### TYPICAL APPLICATIONS

- Ceiling Fans • Range Hoods • Whole-House Attic Fans
- Vibrators • Humidifiers • Air Conditioners
- Fireplace Blowers • Window Fans •

UL Recognized\* — CSA Certified\*

### DESCRIPTION

The KBMC and KBMS solid state controls provide infinitely variable speed control of Shaded Pole, PSC, and AC/DC motors. The consumer is allowed selection of air volume, noise level, and energy consumption to individual preference. Solid state variable speed controls are designed to replace obsolete tapped windings, chokes, rheostats, and other methods which are currently being used to obtain speed variation. All models utilize full-wave phase control circuitry which minimizes power loss and heat dissipation. A standard self-threading Zytel mounting bushing and potentiometer shaft is used for added electrical isolation. In addition, customized metal bushings and shafts may be obtained on special order. The controls are available with an internal on/off line switch and are also available with an optional third lead which can be used to control auxiliary circuits such as relays and indicator lamps. A high-gain radio noise suppression filter and a minimum speed trimpot are also available on all models. Specifically designed for OEM applications, the KBMC and KBMS Series offer a large selection of mounting arrangements, ratings, and options. A wall mounting kit is available which includes dial plate, knob, mounting strap, hardware and instructions. Units are normally supplied with a flame retardant ABS case; however, the KBMC Series is available uncased. Controls are UL Recognized and CSA Certified.\*Special lead lengths and colors are available upon request. A mounting nut is supplied as standard with all controls.

\*Most models — consult factory.

**ELECTRICAL RATINGS**

MODEL	VOLTAGE (VAC 50/60 Hz)	CURRENT (RMS AMPS)
<b>KBMC-13BV</b>	120	2.5*
<b>KBMC-14BV</b>	120	4.0
<b>KBMC-23BV</b>	240	2.5*
<b>KBMS-11BV</b>	120	1.6
<b>KBMS-13BV</b>	120	3.0
<b>KBMS-23BV</b>	240	3.0

\*KBMC-13B and KBMC-23B without enclosure ("B") has an increased rating of 3.0 amps.

**GENERAL INFORMATION**

Controls as indicated are supplied as standard with the following:

- ABS enclosure
- "On/Off rotary line switch
- High-gain RFI filter
- Minimum speed trimpot

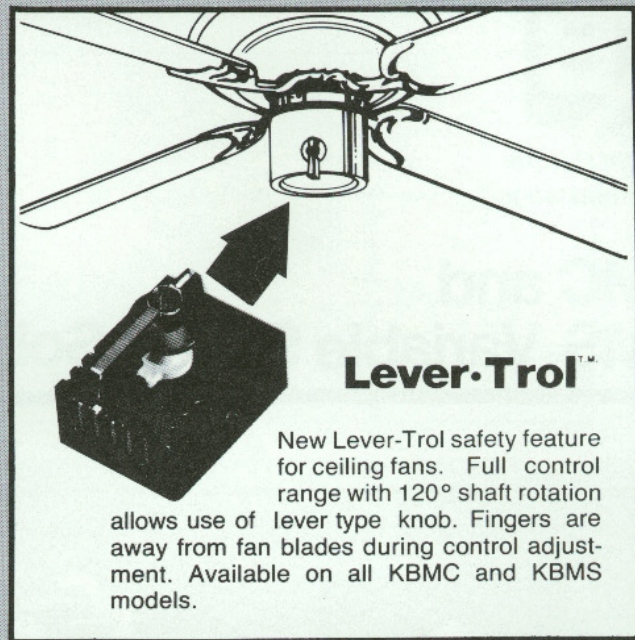
To eliminate ABS enclosure delete "B" suffix from model No. (KBMC-13)

To eliminate RFI filter add "I" suffix to model No. (KBMC-13I)

To eliminate "On/Off" switch add "NS" suffix to model No. (KBMC-13NS)

To eliminate minimum speed trimpot delete "V" from model No.

**POTENTIOMETER ROTATION:** on controls with built-in On/Off switch, control output is from "OFF" to "HIGH" to "LOW" with clockwise potentiometer shaft rotation. To reverse control output to "OFF" to "LOW" to "HIGH" add



"R" suffix to model No. (KBMC-13R). On controls without built-in ON/OFF switch (NS suffix), control output is from "Low" to "High" with clockwise potentiometer shaft rotation. To reverse control output to "High" to "Low" add "R" suffix to model No. (KBMC-13NSR).

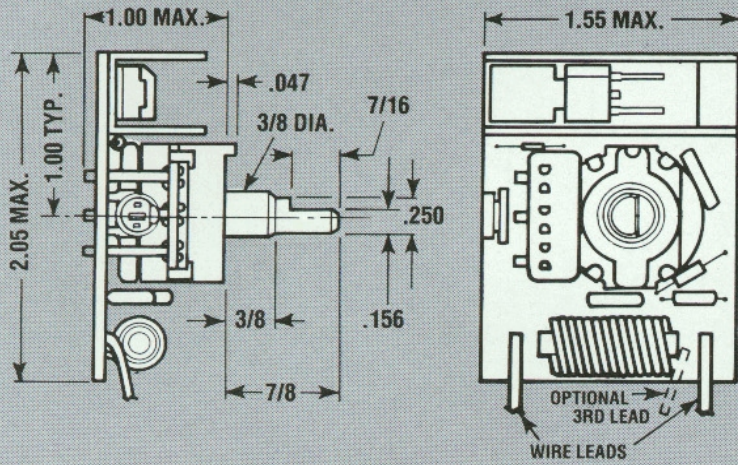
**LEADS:** standard leads are No. 18 AWG and are approximately 6" long and stripped 1/2". Other lead lengths are available upon request. Quick-disconnect terminals on leads also available.

**SUFFIX ADDERS WITH DESCRIPTIONS**

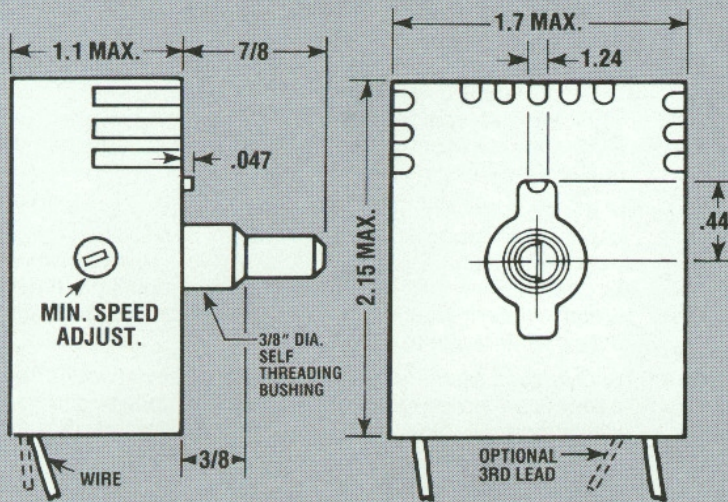
Suffix Identification	Description	Notes
<b>B</b>	Adds Enclosure, Flame Retardant ABS	All KBMS models and model KBMC-14B are always supplied with ABS enclosures
<b>V</b>	Adds Minimum Speed Trimpot	A fixed resistor is used on all models that do not contain the minimum speed trimpot
<b>K</b>	Adds Kit for Wall Box Mounting	Mounting Kit contains Dial Plate, Mounting Strap, Knob, Mtg. Hardware, Instructions and Individual Packaging
<b>T</b>	Adds Lever-Trol™	Lever-Trol feature restricts potentiometer rotation to 120° so that a lever type knob can be utilized
<b>NS</b>	Deletes On/Off Line Switch	When On/Off switch is not supplied the standard control output is from "Low to High"
<b>I</b>	Deletes RFI Filter	Caution must be exercised when eliminating RFI filter (see application notes)
<b>F</b>	Adds Built-in Fuse	Built-in fuse is available on KBMC models only. Fuse rating and type must be specified.
<b>L</b>	Adds Auxiliary 3rd Lead	Total current of motor load and auxiliary load must not exceed 4.0 amps.
<b>R</b>	Reverses Control Output Vs. Pot. Rotation	(See general information on Potentiometer Rotation)

TYPICAL DIMENSIONS (INCHES)

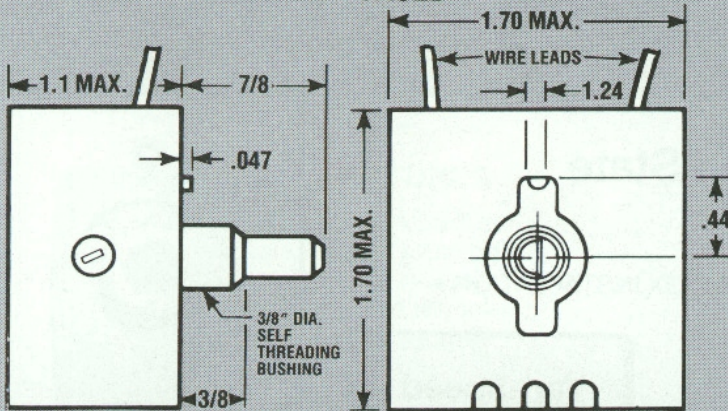
KBMC UNCASED



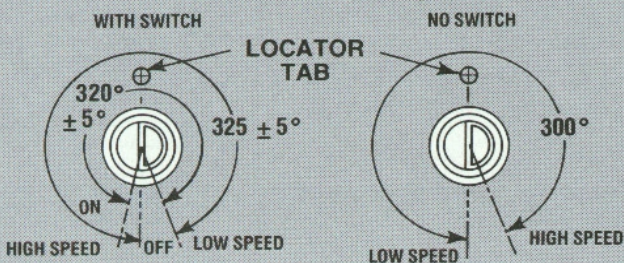
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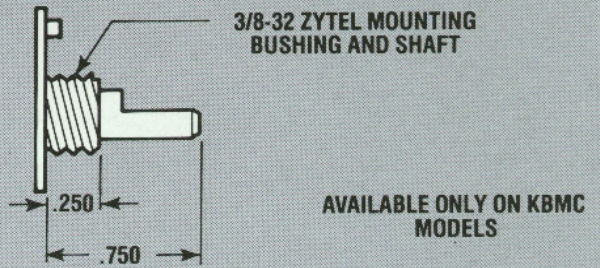
KBMS CASED



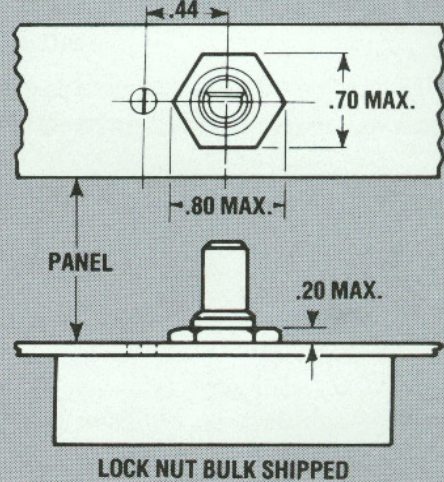
POTENTIOMETER ROTATION (Except Lever-Trol.)



ALTERNATE MOUNTING BUSHING

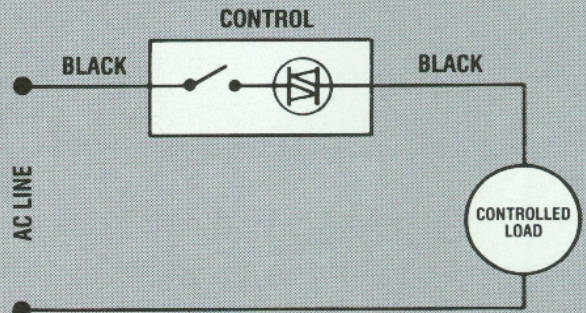


MOUNTING DIMENSIONS

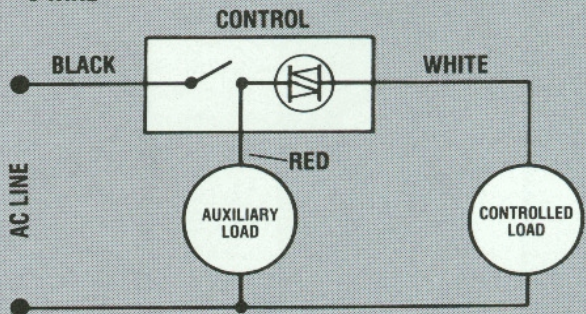


CONNECTION DIAGRAMS

2 WIRE

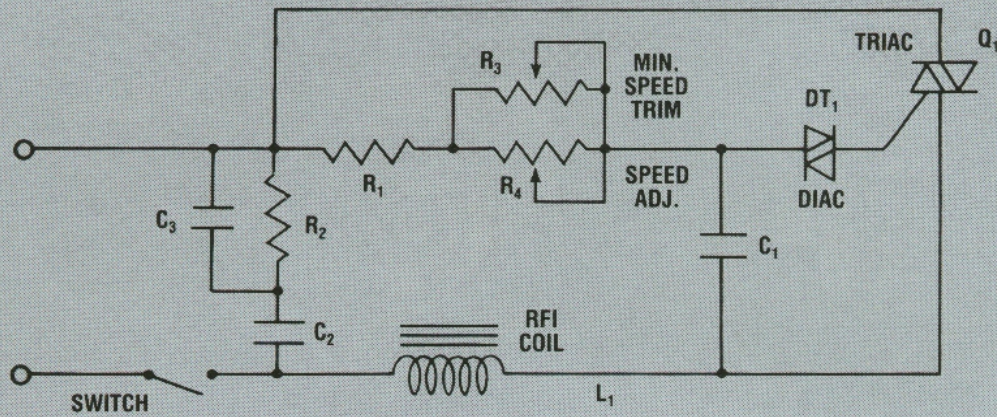


3 WIRE



NOTE: SWITCH rated 4.0 amps RMS.

**SCHEMATIC**



NOTE: In some models actual circuits used may vary from schematic as shown.

**APPLICATION NOTES:**

1. *Temperature Test* — The non-sinusoidal output voltage of a solid state control may increase motor heating. Therefore, it is necessary that a temperature test be performed to insure that motor is operating within manufacturer's specifications.
2. *Failure Mode* — Certain failure modes of solid state controls, such as half-waving, can cause high levels of DC. This may produce severe overheating and motor burnout. Therefore, a thermal overload protector is required which will limit the maximum motor temperature as prescribed by the manufacturer.
3. *Radio Frequency Interference (RFI)* — Solid state speed controls usually generate annoying radio noise on the AM broadcast band. KB controls incorporate, as standard, a high-gain RFI suppression filter which significantly reduces this interference.
4. *Low End Set Point* — All controls are set to 65 volts

+/- 3V output as standard with an input voltage of 120 volts. An average responding AC voltmeter is used for calibration. Custom voltage settings are available as per customer requirements.

5. *Motor Suitability* — Motors must be loaded to near full capacity with appropriate fan blade in order to achieve proper speed control. Generally, motor suitability is established by determining motor speed as a function of applied voltage. Motor is determined as suitable if it changes speed linearly over a wide range of voltage.

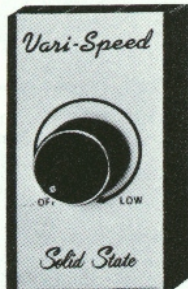
6. *Overseas Markets* — Standard snubber network components are prone to failure when used on power sources with abnormally high transients. Therefore, controls that are used in remote areas of the world, such as Asia, Africa, and Australia, or where power generation is not properly regulated, require a special snubber. KB uses metalized paper capacitors and flameproof resistors in these applications.

**Other Variable Speed Solid State AC Motor Controls**

• DESIGNED FOR 2" x 4" ELECTRICAL WALL BOX INSTALLATION •



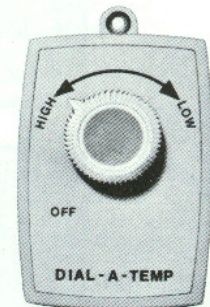
2.5, 3.0, 4.0, 5.0 & 6.0 AMP. MODELS



8.0 & 10.0 AMP. MODELS



10.0, 12.0 & 15.0 AMP. MODELS



**NEW FROM KB**

The KBMS-13 has been packaged into a compact plug-in control with no wires to connect.

Just plug your fan into the convenient DIAL-A-TEMP receptacle. Then plug DIAL-A-TEMP into a standard 120 volt outlet.