



TYPES **W5MT3A**, **W5MT3W**, AND

**W5MT3AW**

METERED **VARIAC**<sup>®</sup> AUTOTRANSFORMERS

*with DURATRAK Coating Process*

(U.S. Patent No. 2,949,592)

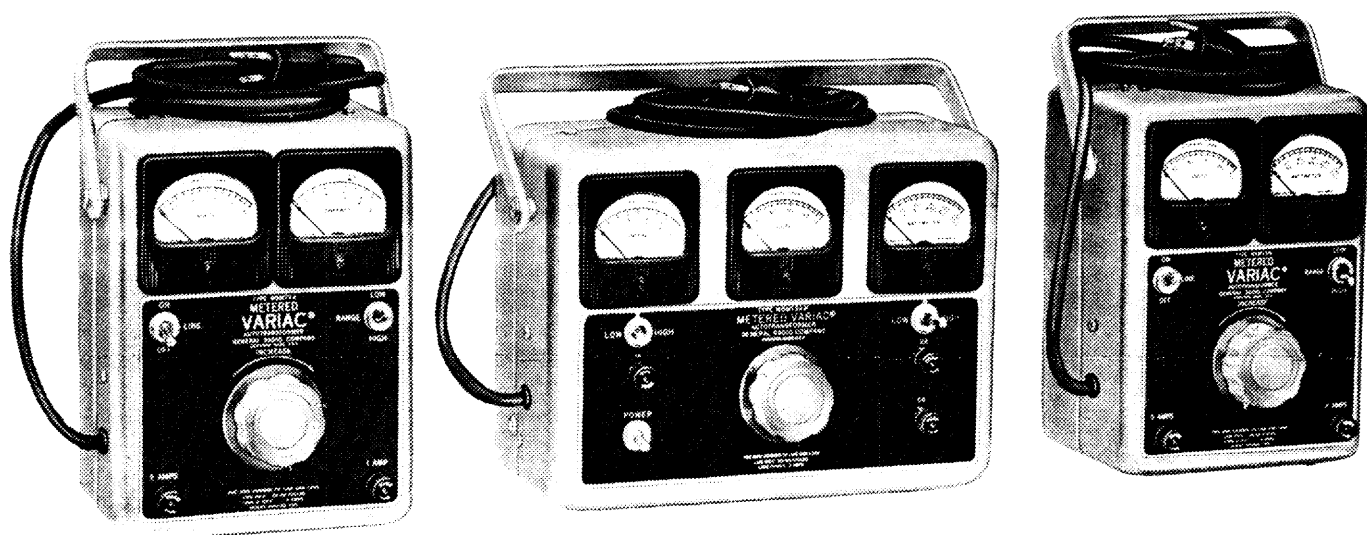


Figure 1. (Above, left), Type W5MT3A; (Above, center), Type W5MT3AW; (Above right), Type W5MT3W.

1. **INPUT POWER.** Metered Variacs are supplied with a three-wire cord and plug, and a two-wire adaptor, for connection to 50-60-cycle, nominal 120-volt power line. The third wire in the cord-plug circuit provides automatic grounding of external metal parts, as a safety feature. Do not attempt to operate the Metered Variacs on direct current, or damage to the unit will result.

2. **LOADS.** Metered Variacs are suitable for the control of any alternating-current load within their rating of 5 amperes (W5MT3A, -AW) or 700 watts (W5MT3W, -AW). Since Metered Variacs are connected for over-voltage (117% of line) operation, care must be taken to avoid damage to loads that are incapable of withstanding higher than line voltage. Metered Variacs are, of course, particularly useful in determining load current, or watts, versus applied voltage.

3. **SWITCHING.** To avoid possible destructive surges, set the control knob to the full counterclockwise (zero voltage) position before connecting the Variac to the line or the load to the Variac. The HIGH-LOW meter switch should be in the HIGH position. Slowly rotate

the control knob clockwise, (increase the voltage) observing the meters. Unusually high readings signify trouble; the voltage should be returned to zero and the trouble corrected. If the ammeter or wattmeter reads below one-fifth of full scale, set the meter switch to LOW for increased sensitivity. The meter range is changed by a current transformer for highest possible accuracy, and make-before-break contacts permit switching under load.

4. **ACCESS.** To gain access to interior parts, first disconnect the unit from the power line. Remove the four slotted screws and the cover. Reverse this procedure to replace the case.

5. **BRUSH TRACK.** The brush tracks on all Metered Variacs are treated by the *DURATRAK* process to prevent injurious oxidation. If cleaning is necessary, use only a soft cloth and a simple solvent such as alcohol or "white" (nonleaded) gasoline. Do not use abrasives; their action may destroy the silver alloy surface.

6. **BRUSHES.** Normally, brushes will last indefinitely. Rapid brush wear is usually caused by the pres-

ence of abrasive on the brush track, which should be cleaned as described in paragraph 5. If brushes wear excessively, replace them as follows:

- a. Rotate the top plate to clear the retaining pins.
- b. Replace with Type VB-2 Brush.
- c. Proper brush insertion is indicated by a slight click, or detent action, as the long axis of the top plate is aligned with the retaining pins.
- d. Seat the new brush for proper operation by swinging it a few times over the abrasive side of a piece of crocus cloth resting on the brush track. Remove the crocus cloth and blow or brush loose particles from the track before applying power.

7. FUSES. The meter circuits of Metered Variacs are fused to prevent overload damage to the meter movements. The fuses required are:

For W5MT3A 1-ampere Bussman Type AGC-1  
5-ampere Bussman Type MTH-5

For W5MT3W 2-ampere Bussman Type AGC-2  
5-ampere Bussman Type MTH-5

For W5MT3AW 1-ampere Bussman Type AGC-1  
2-ampere Bussman Type AGC-2  
5-ampere Bussman Type MTH-5

Replacement with fuses of a higher rating will endanger meters.

8. SERVICE. In case of difficulties that cannot be eliminated by the use of these service instructions, please write or phone our Service Department, giving full information of the trouble and of steps taken to remedy it. Be sure to mention the serial and type numbers of the instrument.

Before returning a Metered Variac for repair, please write to our Service Department, requesting shipping instructions. State the type number of the unit and the date of purchase. Pack it carefully; returned units often suffer more damage in shipment than in service.

## SPECIFICATIONS

Frequency: 50-60 cycles.

Input Voltage: 120.

No-Load Loss (60 cycles): 9 watts

Output: 0-140 volts; 5 amperes, maximum.

Voltmeter Range: 0-150

Ammeter Ranges: W5MT3A, -AW: two each, 0-1 and 0-5 amperes.

Wattmeter Ranges: W5MT3W, -AW: two each, 0-150 and 0-750, watts.

Meter Accuracies:  $\pm 3\%$  of full scale.

Switching: OFF-ON, two-pole switch disconnects assembly from line in "OFF" position.

Meter RANGE, HIGH-LOW, make-before-break to permit switching under load.

Terminals: Line - 3-wire cord and plug.

Load - 3-wire outlet receptacle (will accept parallel 2-wire plug.)

Fusing: W5MT3A - 1 ampere, low range. 5 ampere, high range.

W5MT3W - 2 ampere, low range. 5 ampere, high range.

W5MT3AW - 1 and 2 ampere, low range. 5 ampere, high range.

Angle of Rotation:  $320^\circ$

Case Dimensions: W5MT3A, -W Width 6-3/4, height 10, depth 6-3/8 inches (175 by 255 by 165 mm).

W5MT3AW, Width 11-5/8, height 8-5/8,

depth 5-1/4 inches (300 by 220 by 135 mm).

Net Weight: W5MT3A, -W 11-3/4 lbs (5.5 kg).

W5MT3AW 12-1/2 lbs (5.7 kg)

# GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS

PHILADELPHIA: 1150 York Road  
Abington, Pennsylvania

WASHINGTON: 8055 13th Street  
Silver Spring, Maryland

NEW YORK: Broad Avenue at Linden  
Ridgefield, New Jersey

CHICAGO: 6605 West North Avenue  
Oak Park, Illinois

CANADA: 99 Floral Parkway  
Toronto 15, Ontario

LOS ANGELES: 1000 North Seward Street  
Los Angeles 38, California

SAN FRANCISCO: 1186 Los Altos Avenue  
Los Altos, California

## REPAIR SERVICES

NEW YORK  
General Radio Company  
Service Department  
Broad Avenue at Linden  
Ridgefield, New Jersey

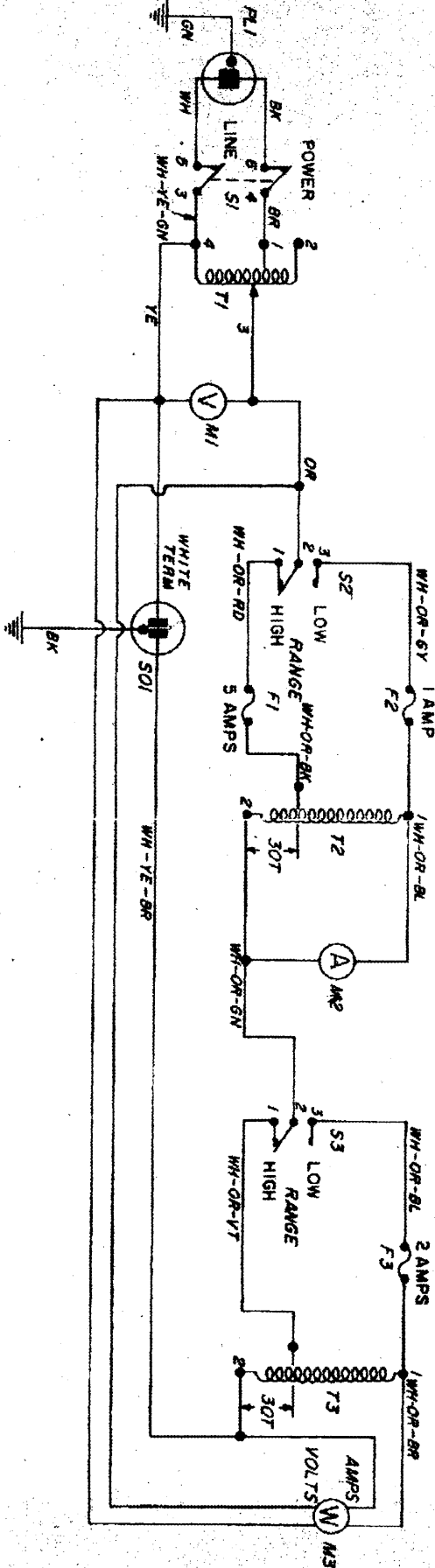
EAST COAST  
General Radio Company  
Service Department  
22 Baker Avenue  
West Concord, Massachusetts

MIDWEST  
General Radio Company  
Service Department  
6605 West North Avenue  
Oak Park, Illinois

WEST COAST  
General Radio Company  
Service Department  
1000 North Seward Street  
Los Angeles 38, California

CANADA  
Bayly Engineering, Ltd.  
First Street  
Ajax, Ontario

# SCHEMATIC DIAGRAM FOR W5MT3AW METERED VARIAC



UNCONTROLLED

FORM NO.	W5-72D								REV.	13
DATE:	3-23-60								REV.	
REVISIONS										
WHITE TERM ADDED TO SO1										2
CAT 6-6-60										
COLORS REVISED PER										3
MARKED RECORD										
CAT 10-2-60										REFD
GENERAL RADIO CO.										
W5-72D										

## INSTRUCTIONS

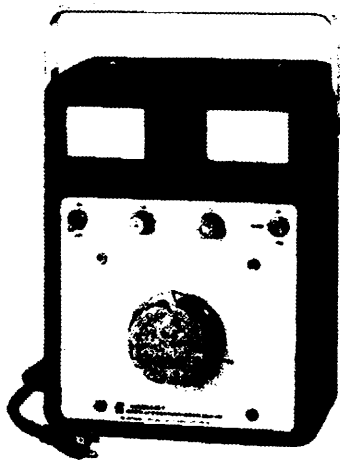
### Models

# W5MT3A, W5MT3W, W5MT3AW, and W5MT3VM metered Variac® autotransformers

with DURATRAK® contact surface

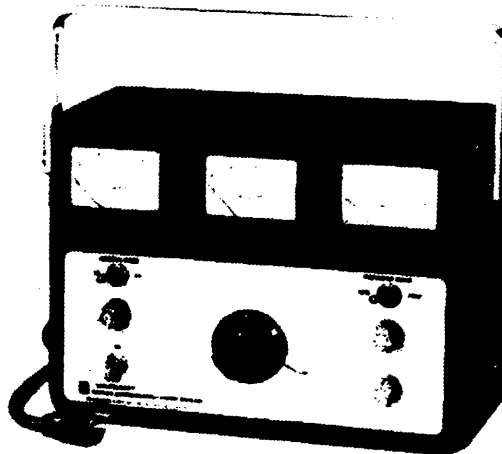
## TECHNIPOWER LLC

P.O. Box 222 • 14 Commerce Drive • Danbury, CT 06813-0222  
(203) 748-7001 • Fax (203) 797-9285



Type W5MT3A

(The Type W5MT3W is similar in appearance)



Type W5MT3AW



Type W5MT3VM

1. **INPUT POWER.** Metered Variac® autotransformers are supplied with a three-wire cord and plug for connection to 50- to 60-cycle nominal 120-volt power line. The third wire in the cord-plug circuit provides automatic grounding of external metal parts, as a safety feature. Do not attempt to operate metered Variac autotransformers on direct current, or damage to the units will result.

2. **LOADS.** Metered Variac autotransformers are suitable for the control of any alternating-current load within their rating of 5 amperes (W5MT3A, AW, VM) or 750 watts (W5MT3W, AW). Since these models are connected for overvoltage (117% of line) operation, care must be taken to avoid damage to loads that are incapable of withstanding higher-than-line voltage.

3. **SWITCHING.** To avoid possible destructive surges, set the control knob to the full counterclockwise (zero voltage) position before connecting the unit to the line or the load to the unit. The HIGH-LOW meter switch (not included in Type W5MT3VM) should be in the HIGH position. Slowly rotate the control knob clockwise (increasing the voltage), and observe the meters.

If the ammeter or wattmeter reads below one-fifth of full scale, set the meter switch to LOW for increased sensitivity. The meter range is changed by a current transformer for highest possible accuracy, and make-before-break contacts permit switching under load.

4. **ACCESS.** To gain access to interior parts, first disconnect the unit from the power line. Remove the four slotted screws and the cover. Reverse this procedure to replace the case.

5. **BRUSH TRACK.** The brush track is stabilized by the Duratrak® contact surface. If cleaning is necessary, use only a soft cloth and a safe solvent such as alcohol or "white" (nonleaded) gasoline. Do not use abrasives; their action may destroy the stabilized surface.

6. **BRUSHES.** Normally, brushes will last indefinitely. Rapid brush wear is usually caused by the presence of abrasive on the brush track, which should be cleaned as described in paragraph 5. Replace brushes as follows:

- Rotate the top plate to clear the retaining pins.
- Replace with Type VB2 Brush.
- Proper brush insertion is indicated by a slight

click, or detent action, as the long axis of the top plate is aligned with the retaining pins.

d. Seat the new brush for proper operation by swinging it a few times over the abrasive side of a piece of crocus cloth resting on the brush track. Remove the crocus cloth and blow or brush loose particles from the track before applying power.

7. FUSES. The meter circuits of Metered Variacs are fused to prevent overload damage to the meter movements. The fuses required are:

- For W5MT3A 1-ampere Bussman Type AGC-1  
5-ampere Bussman Type MTH-5
- For W5MT3W 2-ampere Bussman Type AGC-2  
5-ampere Bussman Type MTH-5
- For W5MT3AW 1-ampere Bussman Type AGC-1  
2-ampere Bussman Type AGC-2  
5-ampere Bussman Type MTH-5

These are fast-blow types; replacement with slow-blow fuses or fuses of a higher rating will endanger the meters.

Overload protection on the Type W5MT3VM is provided by a thermal trip device which disconnects the load under conditions that might cause the safe operating temperature to be exceeded. The thermal capacity is sufficient to allow moderate short-time overloads that will not harm the unit. After correcting the overload condition, reset the tripped connector by pressing the red reset button. Make sure that the protector has had time enough to cool.

8. SERVICE. In case of difficulties that cannot be eliminated by the use of these service instructions, please write or phone our Service Department, giving full information of the trouble and of steps taken to remedy it. Be sure to mention the type number of the unit.

Before returning a metered Variac autotransformer for repair, please write to our Service Department, requesting shipping instructions. State the type number of the unit and the date of purchase. Pack it carefully; returned units often suffer more damage in shipment than in service.

### SPECIFICATIONS

Frequency: 50-60 cps.

Input Voltage: 120.

No-Load Loss (60-cycle): 9 watts.

Output: 0-140 volts; 5 amperes, maximum.

Voltmeter Range: 0-150 volts.

Ammeter Ranges: W5MT3A, AW: two each, 0-1 and 0-5 amperes.

Wattmeter Ranges: W5MT3W, AW: two each, 0-150 and 0-750, watts.

Meter Accuracies:  $\pm 3\%$  of full scale.

Switching: OFF-ON, two pole switch disconnects assembly from line in "OFF" position.

Types W5MT3A, W, AW include a meter-range, HIGH-LOW, make-before-break switch to permit switching under load.

Terminals: Line, 3-wire cord and plug.

Load, 3-wire outlet receptacle (will accept parallel 2-wire plug)

Fusing: W5MT3A, 1-ampere, low range; 5-ampere, high range.  
W5MT3W, 2-ampere, low range; 5-ampere, high range.  
W5MT3AW, 1- and 2-ampere; low range, 5-ampere, high range.  
W5MT3VM, Klixon circuit breaker, reset by push-button on panel.

Angle of Rotation:  $320^\circ$ .

Case W5MT3A, W, width 6-3/4, height 10,  
Dimensions: depth 6-3/8 inches (175 by 255 by 165 mm).  
W5MT3AW, width 11-5/8, height 8-5/8,  
depth 5-1/4 inches (300 by 220 by 135 mm).  
W5MT3VM, width 4-7/8, height 6-5/8,  
depth 4-1/2 inches (125 by 170 by 115 mm).

Net Weight: W5MT3A, W, 11-3/4 pounds (5.5 kg).  
W5MT3AW, 12-1/2 pounds (5.7 kg).  
W5MT3VM, 8-1/4 pounds (3.8 kg).

### ELECTRICAL PARTS LIST

Qty	Description	Part No.	Qty	Description	Part No.
The following are common parts.					
1	Terminal Plate asm.	3030-1780	1	Case	3030-8700
1	Radiator asm.	3030-3010	1	Handle	3030-8720
1	Unit brush	3200-5900	1	Cover	3030-8710
1	Take off connector	3030-0822	2	Switch, Toggle, LOW/HIGH	3030-4600
1	Knob asm.	5520-5521	1	Fuse, 5 amp.	5330-3900
1	Shaft	3030-6070	1	Fuse, 1 amp.	5330-3500
1	Reversible dial plate	3030-9500	1	Fuse, 2 amp.	5330-3700
1	Bushing, metal	4143-5161	1	Voltmeter	5730-1421
1	Switch, Toggle ON/OFF	3030-0400	1	Ammeter	5730-1422
W5MT3A, W5MT3W parts peculiar					
1	Case	3030-8620	1	Wattmeter	5730-1423
1	Handle	3030-8110	1	Ammeter (W5MT3A only),	5730-1422
1	Cover	3030-8010	1	Wattmeter (W5MT3W only)	5730-1423
1	Switch, Toggle RANGE	3030-4600	1	Fuse, 5 amp.	5330-3900
1	Voltmeter	5730-1421	1	Fuse, 1 amp. (W5MT3A only)	5330-3500
1	Ammeter (W5MT3A only),	5730-1422	1	Fuse, 2 amp. (W5MT3W only)	5330-3700
1	Wattmeter (W5MT3W only)	5730-1423	W5MT3VM parts peculiar		
1	Fuse, 5 amp.	5330-3900	1	Case	3030-8630
1	Fuse, 1 amp. (W5MT3A only)	5330-3500	1	Handle	3030-8110
1	Fuse, 2 amp. (W5MT3W only)	5330-3700	1	Cover	3030-3040
			1	Overload Protect	3030-1020
			1	Voltmeter	5730-1390

Note - All fuses standard Bussmann AGC types.

