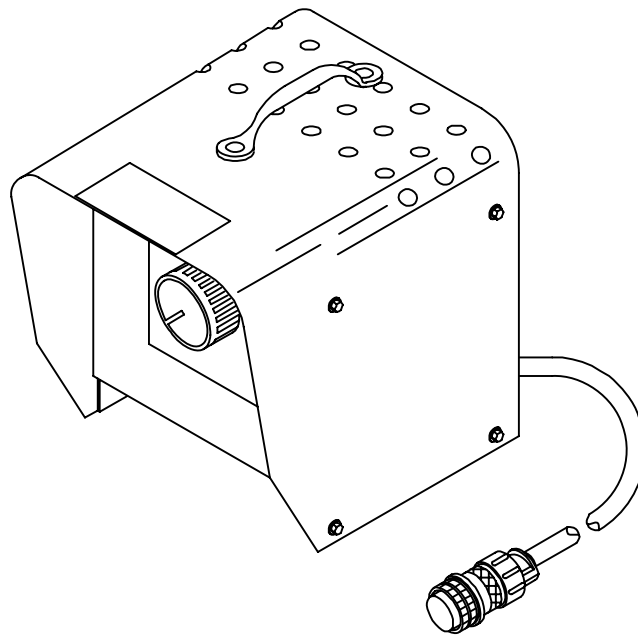




February 1992 FORM: OM-823G

Effective With Serial No. KB055102

**MODEL: RHC-3  
RHC-3-2  
RHC-3GD9A  
RHC-3GD25B  
RHCS-3  
RHC-3-GD34A  
RHC-14  
RHC-23**



# OWNER'S MANUAL

**IMPORTANT:** Read and understand the entire contents of both this manual and the power source manual used with this unit, with special emphasis on the safety material throughout both manuals, before installing, operating, or maintaining this equipment. This unit and these instructions are for use only by persons trained and experienced in the safe operation of welding equipment. Do not allow untrained persons to install, operate, or maintain this unit. Contact your distributor if you do not fully understand these instructions.

**MILLER ELECTRIC Mfg. Co.**  
A Miller Group Ltd., Company

P.O. Box 1079  
Appleton, WI 54912 USA  
Tel. 414-734-9821

# MILLER'S TRUE BLUE™ LIMITED WARRANTY

Effective January 1, 1992  
(Equipment with a serial number preface of "KC" or newer)

This limited warranty supersedes all previous MILLER warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - Subject to the terms and conditions below, MILLER Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new MILLER equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by MILLER. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, MILLER will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. MILLER must be notified in writing within thirty (30) days of such defect or failure, at which time MILLER will provide instructions on the warranty claim procedures to be followed.

MILLER shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to the distributor.

1. 5 Years Parts - 3 Years Labor
  - \* Original main power rectifiers
2. 3 Years - Parts and Labor
  - \* Transformer/Rectifier Power Sources
  - \* Plasma Arc Cutting Power Sources
  - \* Semi-Automatic and Automatic Wire Feeders
  - \* Robots
3. 2 Years - Parts and Labor
  - \* Engine Driven Welding Generators  
(NOTE: Engines are warranted separately by the engine manufacturer.)
  - \* Air Compressors
4. 1 Year - Parts and Labor
  - \* Motor Driven Guns
  - \* Process Controllers
  - \* Water Coolant Systems
  - \* HF Units
  - \* Grids
  - \* Spot Welders
  - \* Load Banks
  - \* SDX Transformers
  - \* Running Gear/Trailers
  - \* Field Options

(NOTE: Field options are covered under True Blue™ for the remaining warranty period of the product they are installed in, or for a minimum of one year - whichever is greater.)
5. 6 Months - Batteries
6. 90 Days - Parts and Labor
  - \* MIG Guns/TIG Torches
  - \* Plasma Cutting Torches

- \* Remote Controls
- \* Accessory Kits
- \* Replacement Parts

MILLER'S True Blue™ Limited Warranty shall not apply to:

1. Items furnished by MILLER, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
2. Consumable components; such as contact tips, cutting nozzles, contactors and relays or parts that fail due to normal wear.
3. Equipment that has been modified by any party other than MILLER, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at MILLER'S option: (1) repair; or (2) replacement; or, where authorized in writing by MILLER in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized MILLER service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. MILLER'S option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a MILLER authorized service facility as determined by MILLER. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

## RECEIVING-HANDLING

Before unpacking equipment, check carton for any damage that may have occurred during shipment. File any claims for loss or damage with the delivering carrier. Assistance for filing or settling claims may be obtained from distributor and/or equipment manufacturer's Transportation Department.

When requesting information about this equipment, always provide Model Designation and Serial or Style Number.

Use the following spaces to record Model Designation and Serial or Style Number of your unit. The information is located on the rating label or nameplate.

Model \_\_\_\_\_

Serial or Style No. \_\_\_\_\_

Date of Purchase \_\_\_\_\_

## RECEIVING-HANDLING

Before unpacking equipment, check carton for any damage that may have occurred during shipment. File any claims for loss or damage **with the delivering carrier**. Assistance for filing or settling claims may be obtained from the distributor and/or the equipment manufacturer's Transportation Department.

When requesting information about this equipment, always provide the Model Description and Serial or Style Number.

Use the following spaces to record the Model Designation and Serial or Style Number of your unit. The information is located on the rating label or nameplate.

Model \_\_\_\_\_

Serial or Style No. \_\_\_\_\_

Date of Purchase \_\_\_\_\_

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## SECTION 1 – SAFETY PRECAUTIONS AND SIGNAL WORDS

### 1-1. GENERAL INFORMATION AND SAFETY

#### A. General

Information presented in this manual and on various labels, tags, and plates on the unit pertains to equipment design, installation, operation, maintenance, and troubleshooting which should be read, understood, and followed for the safe and effective use of this equipment.

The nameplate of this unit uses international symbols for labeling the front panel controls. The symbols also appear at the appropriate section in the text.

#### B. Safety

The installation, operation, maintenance, and troubleshooting of arc welding equipment requires practices and procedures which ensure personal safety and the safety of others. Therefore, this equipment is to be installed, operated, and maintained only by qualified persons in accordance with this manual and all applicable codes such as, but not limited to, those listed at the end of Section 1 – Safety Rules For Operation Of Arc Welding Power Source.

### 1-2. SAFETY ALERT SYMBOL AND SIGNAL WORDS

The following safety alert symbol and signal words are used throughout this manual to call attention to and

identify different levels of hazard and special instructions.



This safety alert symbol is used with the signal words **WARNING** and **CAUTION** to call attention to the safety statements.



**WARNING** statements identify procedures or practices which must be followed to avoid serious personal injury or loss of life.



**CAUTION** statements identify procedures or practices which must be followed to avoid minor personal injury or damage to this equipment.

**IMPORTANT** statements identify special instructions necessary for the most efficient operation of this equipment.

### 1-3. DESCRIPTION

Remote Hand Controls are designed for use as remote amperage or voltage controls in conjunction with a welding power source or welding generator having electric control facilities. Remote Hand Controls with the letters GD displayed in the model description are designed for use with welding generators only.

## SECTION 2 – INSTALLATION

**Table 2-1. Cord Conductor Length And Size**

Amperage or Voltage Control	
Cord Length	Conductor Size*
Up to 20ft (6 m)	No. 16
Up to 20ft (6 m) (GD Models)	No. 14
21 to 100ft (6 to 30 m) (GD Models)	No. 12
21 to 50ft (6 to 15 m)	No. 14
51 to 100ft (16 to 31 m)	No. 12
101 to 200ft (31 to 61 m)	No. 10

\*AWG-American Wire Gauge

### 2-1. LOCATION

The Remote Hand Controls is equipped with a twenty foot (6 m) interconnecting multi-conductor cord (unless otherwise specified) which enables the Remote Hand Control to be remotely located from the welding power

source or welding generator. The Remote Hand Control can be wall mounted or placed on a stand at the work area.

If it is necessary to install a multi-conductor cord of longer length, refer to Table 2-1 for cord conductor size according to the desired length. Refer to Section 5 - Electrical Diagrams for connections

### 2-2. INTERCONNECTIONS

1. To make connections on models equipped with the twistlock plug, fully insert the twistlock plug that is attached to the Remote Hand Control cord into Remote Amperage or Voltage Control Receptacle on the welding power source or welding generator. Turn the cap in a clockwise direction, as far as it will turn, to lock the connection.
2. To make connections on models equipped with the 14-pin or 5-pin Amphenol plug, align keyway, insert plug, and rotate threaded collar fully clockwise.

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## SECTION 3 – OPERATOR CONTROLS

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### 3-1. OPERATION

#### A. General

When a Remote Hand Control is being used, it should be noted that on most welding power sources or welding generators, the Remote Hand Control functions as a fine amperage or voltage adjustment of the Amperage or Voltage Adjustment Control setting on the welding power source or welding generator. For example, if the Amperage or Voltage Adjustment Control on the welding power source or welding generator is set at the mid-point position, the Remote Hand Control will provide (from its minimum to maximum positions) fine adjustment of one half of the welding power source or welding generator output. If full adjustment of the maximum output of the welding power source or welding generator from the Remote Hand Control is desired, it will be necessary to rotate the Amperage or Voltage Adjustment Control on the welding generator to the maximum position. The Remote Hand Control dial is calibrated in percentage in increments of ten from 0 to 100 percent.

On some welding power source or welding generators the Amperage Voltage Adjustment Control on the Welding power source or welding generator is inoperative when a Remote Hand Control is connected in the welding power source or welding generator control circuitry. In this situation, the Remote Hand Control provides complete control from the minimum to the maximum output of the welding power source or welding generator rather than fine adjustment of the Amperage or Voltage Adjustment control setting on the welding power source or welding generator.

To determine in which way the Remote Hand Control affects the operation of the welding power source or welding generator, refer to the welding power source or welding generator circuit diagram and/or instruction Manual.

#### B. Remote Hand Control Of Two Welding Power Sources

Remote amperage or voltage control of two welding power sources from one Remote Hand Control is made possible through the use of Remote Hand Control having two rheostats. These Remote Hand Controls are identified by a model suffix of -2, and are designed to simultaneously control two identical welding power sources. These Remote Hand Controls have two rheostats coupled on a common control shaft. Rotating the knob on the Remote Hand Control simultaneously adjusts each rheostat in the control to the same value, thus making possible remote control of two welding power sources from a single Remote Hand Control.

**IMPORTANT:** *When a Remote Hand Control is used, refer to the Instruction Manual of the welding power source or welding generator for additional operational information.*

### 3-2. CONTACTOR SWITCH



#### **WARNING: ELECTRIC SHOCK can kill.**

- Do not touch live electrical parts
- Do not touch the weld output terminals when the contactor is energized.
- Do not touch electrode and work clamp at the same time.

**IMPORTANT:** *To use the RHC-14 or RHC-23 contactor switch, the OUTPUT (CONTACTOR) switch on the welding power source must be in the Remote position for proper remote control operation.*

The RHC-14 or RHC-23 switch has two positions, ON and OFF. Placing this switch in the ON position provides open-circuit voltage. Placing this switch in the OFF position stops open-circuit voltage (ocv goes to zero).

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## SECTION 4 – MAINTENANCE

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#### **WARNING: ELECTRIC SHOCK can kill; HOT SURFACES can cause severe burns.**

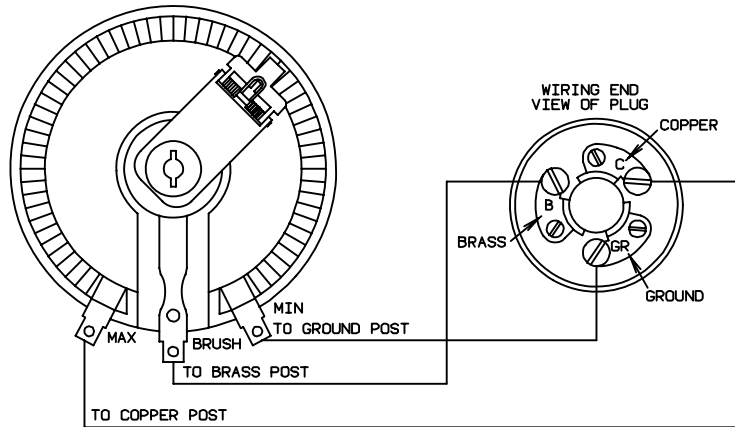
- Do not touch live electrical parts.
- Disconnect plugs from power source before inspecting or servicing.
- Allow unit to cool before servicing.

Once a month inspect the Remote Hand Control cord for breaks in the insulating jacket particularly at the plug

and at the strain relief connector on the Remote Hand Control base. Repair all breaks with electrical tape, or replace the cord if necessary.

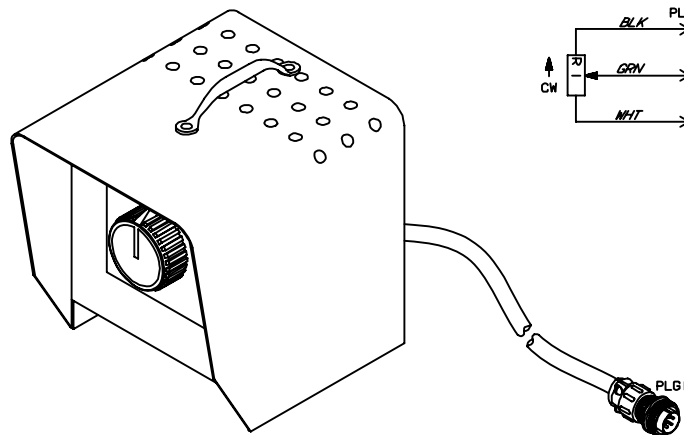
Daily, rotate the Remote Hand Control knob from the 0 to 100 percent position. This procedure will prevent oxidation from forming on the contacts, which could insulate the contacts from the brush, causing the control to become inoperative. Refer to Table 2-1 for proper cord conductor size and to Diagrams 5-1 through 5-5 for proper cord conductor connections.

## SECTION 5 – ELECTRICAL DIAGRAMS



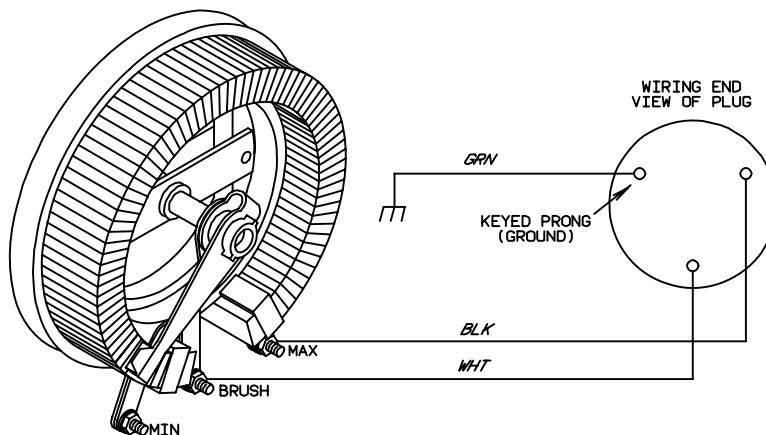
**Circuit Diagram No. SA-150 670**

**Diagram 5-1. Circuit Diagram For Remote Hand Control Used With Transformer Arc Welding Power Source**



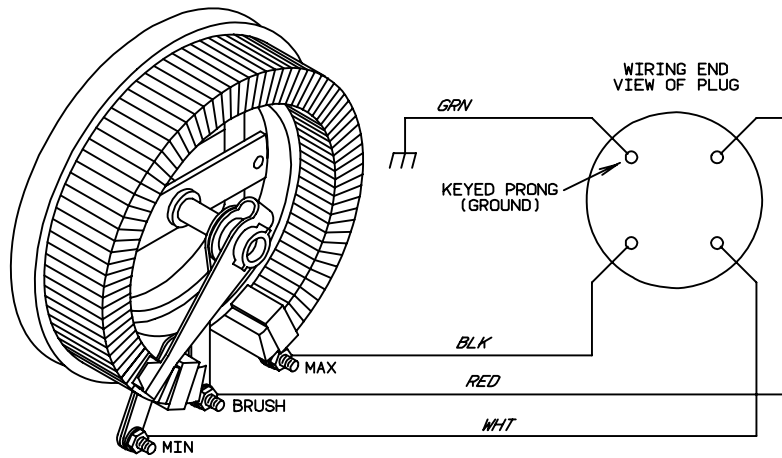
**Circuit Diagram No. SA-150 671**

**Diagram 5-2. Circuit Diagram For RHCS-3**



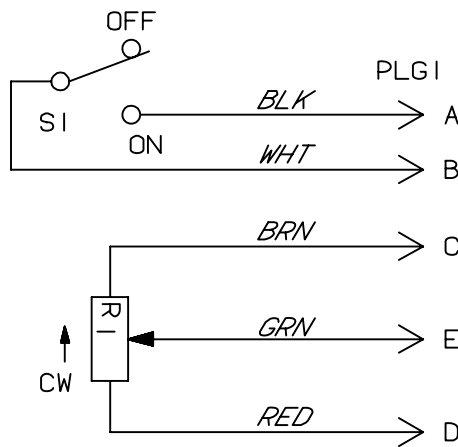
**Circuit Diagram No. SA-094 231-A**

**Diagram 5-3. Circuit Diagram For RHC-3-GD9A And RHC-3-GD34A**



Circuit Diagram No. SA-094 232-A

Diagram 5-4. Circuit Diagram For RHC-3-GD25B



Circuit Diagram No. SA-053 656-A

Diagram 5-5. Circuit Diagram For RHC-14 And RHC-23

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**SECTION 6 – PARTS LIST**

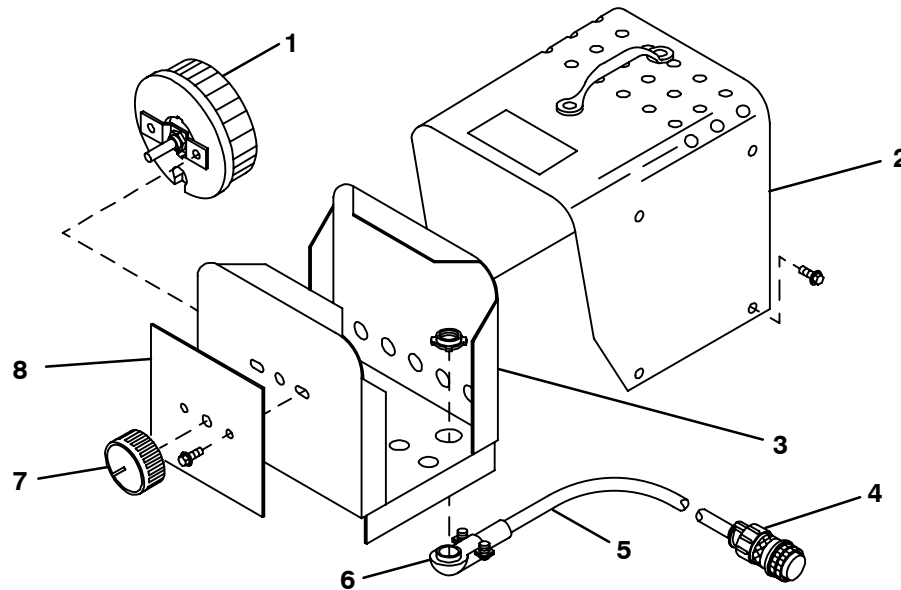
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Item No.	Dia. Mkgs.	Part No.	Description	Quantity				
				Model				
				RHC-3	RHC-3-2	RHC-14	RHC-23	RHCS-3

**Figure 6-1. Complete Assembly**

.. 1 .	R1 ..	030 653	.. RHEOSTAT, WW 150W 15 ohm	.....	1				
.. 1 .	R1 ..	107 363	.. RHEOSTAT, WW 150W 15 ohm	.....	1				
.. 1 .	R1 ..	035 897	.. POTENTIOMETER, C sltd sft 1/T 2W 1000 ohm	.....	1	.. 1			
.. 1 .	R1 ..	039 272	.. RHEOSTAT, WW 150W 1250 ohm	.....	1				1
.. 2 .....	+021	475	.. WRAPPER	.....	1	.. 1			1
.. 2 .....	+014	417	.. WRAPPER	.....	1	.. 1			1
.....	085	220	.. LABEL, caution electric circuit	.....	1	.. 1	.. 1	.. 1	.. 1
.. 3 .....	021	474	.. CASE SECTION, base/front/rear	.....	1				1
.. 3 .....	106	952	.. CASE SECTION, base/front/rear	.....	1				
.. 3 .....	109	974	.. CASE SECTION, base/front/rear	.....	1	.. 1			1
.. 4 PLG1	605	797	.. PLUG, twlk 3P3W 20A 125V	.....	1	.. 2			
.. 4 PLG1	144	310	.. HOUSING PLUG & PINS, (consisting of)	.....	1				
.....	134	732	.. TERMINAL, male 1 pin 24-20 wire	.....	14				
.....	143	922	.. CLAMP, cable strain relief sz 17 & 20	.....	1				
.. 4 PLG1	039	273	.. PLUG, 5 pin MS-3106A-16S-8P	.....	1	.. 1			1
.....	039	685	.. CLAMP, cable AN-3057-8	.....	1	.. 1			1
.. 5 .....	600	733	.. CORD SET, pwr 115V 16ga 3/c 20ft	.....	1	.. 2			1
.. 5 .....	052	246	.. CABLE, pwr 20ga 5/c (order by ft)	.....	20ft				20ft
.. 6 .....	010	659	.. CONNECTOR, clamp cable .375 90deg	.....	1	.. 2			1
.. 6 .....	070	654	.. BUSHING, strain relief .300 ID x .550mtg hole	.....	1	.. 1			1
.. 7 .....	097	926	.. KNOB, pointer 2.375dia x .250 ID	.....	1	.. 1			1
.. 7 .....	097	922	.. KNOB, pointer .875dia x .250 ID	.....	1	.. 1			1
.. 8 .....	039	411	.. NAMEPLATE	.....	1				
.. 8 .....	148	720	.. NAMEPLATE	.....	1				
.. 8 .....	130	214	.. NAMEPLATE	.....	1				
.. 8 .....	053	574	.. PLATE, ind current	.....	1				
.. 8 .....	148	716	.. NAMEPLATE	.....	1				1
.....	S1 ..	011	609	.. SWITCH, tgl SPDT 15A 125VAC	.....	1	.. 1		1
.....	604	311	.. GROMMET, rbr .250 ID x .375mtg hole	.....	1				1



SA-141 128

**Figure 6-1. Complete Assembly (RHC-3 Illustrated)**

+When ordering a component originally displaying a precautionary label, the label should also be ordered.  
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

Item No.	Dia. Mkgs.	Part No.	Description	Quantity		
				Model		
				RHC-3-GD		
				9A	25B	34A

**Complete Assembly (Use Fig 6-1 View)**

.. 1	...	R1	.. 005 355	.. RHEOSTAT, WW 50W 9 ohm	.....	1		
.. 1	...	R1	.. 605 049	.. RHEOSTAT, WW 300W 25 ohm	.....	1		
.. 1	...	R1	.. 605 960	.. RHEOSTAT, WW 300W 34 ohm	.....	1		
.. 2	...	R1	+021 475	.. WRAPPER	.....	1	1	1
			085 220	.. LABEL, caution electrical circuit	.....	1	1	1
.. 3	.....		021 474	.. CASE SECTION, base/front/rear	.....	1	1	1
.. 4	.. PLG1		032 898	.. PLUG, twlk grd 2P3W 15A 125V	.....	1		1
.. 4	.. PLG1		039 621	.. PLUG, twlk armd 4P4W 20A 250V	.....	1		
.. 5	.....		600 349	.. CABLE, port No.14 3/c (order by ft)	.....	20ft		20ft
.. 5	.....		604 834	.. CABLE, port No.14 4/c (order by ft)	.....	20ft		
.. 6	.....		010 659	.. CONNECTOR, clamp .375 90deg	.....	1	1	1
.. 7	.....		097 926	.. KNOB, pointer 2.375dia x .250 ID	.....	1		
.. 7	.....		148 723	.. KNOB, pointer 2.375dia x .379 ID	.....	1	1	1
.. 8	.....		006 101	.. PLATE, ind amperage	.....	1		
.. 8	.....		013 615	.. PLATE, ind amperage	.....	1		
.. 8	.....		148 717	.. NAMEPLATE	.....			1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.  
 BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.