

PC-401-A-1 Converter/Charger

PC-401-A-2 Converter

A complete description of the PHILLIPS Limited PREMIUM WARRANTY PROGRAM covering this unit is contained in this GUIDE. Read warranty program thoroughly – fill out and mail WARRANTY REGISTRATION FORM within 30 days of purchase of Recreational Vehicle.

This PHILLIPS Power Supply (Converter/Charger or Converter) contains these functions:

- 1. Provides 12 Volt DC power to operate all 12 Volt lights and 12 Volt DC motors in your Recreational Vehicle (RV) when connected to an external 115 Volt AC power supply source.
  - A. PC-401-A-1 and PC-401-A-2 are designed for 40 AMPS maximum continuous load.
- 2. Features AUTOMATIC SWITCHING between the Power Supply and the RV storage battery for 12 Volt DC power for your RV.

Functions 1 and 2 allow the 12 Volt DC electrical system of RV to operate at all times.

 PC-401-A-1 Converter/Charger contains an automatic, solid-state POSITIVE CONTROL Battery Charger section by which the storage battery of your RV can be fully charged and maintained at "Full Charge" when the Converter/Charger is connected to the external 115 Volt AC power source

PC-401-A-2 Converter DOES NOT CONTAIN this Battery Charger Section.

FORM PR-6285

PRINTED IN U.S.A.

#### 1. OPERATION OF 12 VOLT LIGHTS AND MOTORS FROM PC-401-A-1 OR PC-401-A-2

When the Recreation I Vehicle (RV) is located where external 115 Volt AC power is available, this 115 Volt AC should be connected to the RV. The PC-401-A-1 or PC-401-A-2 will then be instantly switched into the circuit – through its AUTOMATIC SWITCHING relay. The PHILLIPS Power Supply will then automatically convert this 115 Volt AC to 12 Volt DC to operate all the 12 Volt electric lights and 12 Volt DC motors of the RV.

The PC-401-A-1 and PC-401-A-2 Power Supply units are designed to provide a maximum continuous load of 40 AMPS for the 12 Volt electric lights and 12 Volt DC motors of the RV.

If difficulty is encountered with operation of 12 Volt TVs, radios, stereos, unfiltered flouresent lights, etc. which require "pure" 12 VDC, check to make sure these items are wired directly into the RV storage battery line rather than into Converter/Charger or Converter 12 VCIt output – as these power supplies do not produce "pure" 12 VDC.

#### AUTOMATIC-RESET CIRCUIT BREAKER

If the Power Supply is equipped with an Automatic-Reset Circuit Breaker and is operated beyond its maximum continuous load limit for an extended period of time, the circuit breaker will automatically "break" the 12 Volt power from the Power Supply to the 12 Volt lights and motors. In a few seconds the breaker will reset itself and the lights and motors will resume operation – only to shortly again "break".

#### REPLACEABLE FUSE(S)

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If replaceable fuse(s) are installed in front compartment of the Power Supply – or are remotely located – for protection of Power Supply or individual lines to lights and motors, it (they) will "blow" if the Power Supply or individual line is loaded beyond capacity of fuse.

When this "breaking" or "blowing" of the 12 Volt power supply occurs as described above, a portion of the RV 12 Volt load – either lights or motors or both – should be turned off in order to reduce the total load. If replaceable tuse(s) are used, these tuse(s) must be replaced with same size tuse. DO NOT put in larger tuse than indicated.

If the reduction of the load in the RV – as is indicated in paragraphs above – does not stop the "breaking" of the circuit breaker or the "blowing" of the replaceable fuse(s), it is an indication that there may be a "short" somewhere along a RV 12 Volt power line or at a non-fused 12 Volt DC motor. In this case, a check of the RV 12 Volt power line(s) and motors should be made. Locate the "short" and take the necessary steps to repair it.

IMPORTANT..... If 12 Volt lights and motors will NOT operate at all when used as indicated in No. 1 above, check to make sure external 115 Volt AC power is properly attached to RV. Then, with 115 VAC power disconnected from FIV as a safety measure, make a visual and mechanical inspection of the electrical connection between RV 115 VAC supply point and the Power Supply. This 115 VAC supply connection to the Power Supply will be standard electrical conduit (cable) wiring or optional "quick-disconnect" power cord. Also, inspect front wiring compartment of Power Supply to make sure various RV 12 Volt light and motor lines are properly wired to the Power Supply – as per instructions in compartment. If necessary, check with your RV dealer or contact our Customer Service Department as indicated in No. 3 below.

#### 2. OPERATION OF 12 VOLT LIGHTS AND MOTORS FROM STORAGE BATTERY

When the Recreational Vehicle (RV) is located where external 115 Volt AC power is NOT available, the PC-401-A-1 or PC-401-A-2 - through its AUTOMATIC SWITCHING - will instantly bring the RV storage battery into the circuit for the necessary 12 Volt power to operate the 12 Volt electric lights and 12 Volt DC rnotors of the RV.

IMPORTANT..... When the RV 12 Volt lights and 12 Volt DC motors are operating off the RV 12 Volt storage battery, it is advisable to reduce the amount of 12 Volt equipment in use. In this manner, you will keep the 12 Volt current drain against the storage battery down to a minimum – conserving your 12 Volt power source as much as possible. An indication of low battery voltage and excessive drain is the gradual dimming of the 12 Volt lights and slow-down of the 12 Volt motors.

When 115 Volt AC is again available, connect it to the RV. The PC-401-A-1 or PC-401-A-2 - through its AUTOMATIC SWITCHING relay - will be brought back into the circuit to again convert this 115 VAC to 12 Volt DC to operate the 12 Volt lights and 12 Volt DC motors.

IMPORTANT..... If 12 Volt lights and motors will NOT operate from storage battery -yet will operate properly when used as indicated in No. 1 above, review No. 2 above. Then, check battery to make sure it is in good condition and fully charged; also, inspect wiring between the Power Supply and battery – and remote switch, if one is used. If fuses are installed in line to battery, check them. If "blown", inspect for overload or "short" in battery line and correct – DO NOT install oversize fuse.

## 3. CHARGING STORAGE BATTERY OF RECREATIONAL VEHICLE FROM PC-401-A-1

When external 115 Volt AC power is connected to the RV, the Battery Charger scation of the PC-401-A--1 PHILLIPS Converter/Charger will automatically "sense" the condition of the RV storage battery. If it is below "full charge" the Charger section of the Converter/Charger will immediately start charging the battery. If the storage battery has been drawn down quite low, it will be charged at a relatively high amperage rate. If the storage battery has not been drained severely, it will be charged at a somewhat lower amperage rate. In all cases, the rate of charge will decline as the battery reaches "Full Charge".

After the storage battery actually reaches "Full Charge" the Charger section of the Converter/Charger will shut off and maintain battery at "Full Charge". It will not resume active charging of the battery until it again falls below "Full Charge".

If the Battery Charger section should not operate, check to make certain wires from storage battery are properly attached in front compartment of Converter. If fuses are used, check their condition. "Blown" fuse indicates overload or "short" in lines from Converter to battery. Check for proper polarity between Converter and battery. If polarity is reversed, a circuit-breaker built-into Charger section will "Open". As soon as polarity-reversal is corrected, the circuit-breaker will "Close" and Charger section will function.

Note that PC-401-A-2 DOES NOT CONTAIN this battery charging section.

STORAGE BATTERY MAINTENANCE. Weekly inspection of the RV storage battery should be a part of your normal maintenance procedure. MAKE SURE THAT THE WATER LEVEL IS ABOVE THE PLATES IN EACH CELL and that the battery is fully charged. If RV is not used for period of time, perform precautionary maintenance on battery as directed by battery manufacturer. Keep the battery terminals clean – do not allow them to become corroded. Be sure wire connections to terminals are tight.

DO NOT DESTROY THIS GUIDE - For future reference, record Model and Serial Numbers here: Model No. PC-401-A-1 Serial No/-0000-5-117 Date of RV purchase 12/2-177 INPUT 115 VAC - TAMPS- bOCYCLES DUTPUT 12.7 VDC CURRENT 40ADC

READ WARRANTY
CAREFULLY
PUT IT IN
EFFECT
BY MAILING
INFORMATION
REQUESTED
WITHIN 30 DAYS

FORM PR 6285

	WARR	ONE YEA		ION FORM
MODEL	NO. PC	-401-A-1		List Model and Serial Numbers
SERIAL	NO./-	0000-5-1	17	from Converter front panel.
Purchase		Installed In		
Date	·	Installed In		Make & Model BV
User's Name				
Address				
City			S	tote
Dealer's Nam	ne			
Address				
City			St	ate
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### PHILLIPS POWER CONVERTER TEST PROCEDURE - PART I

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## DO NOT REMOVE THE CONVERTER FROM THE RECREATIONAL VEHICLE

### TESTING CONVERTER

- If the 110 volt breaker feeding the converter "trips", unplug the shore line and disconnect the 110 volt wires inside the converter, reset the breaker and plug shore line in again. If the breaker continues to "trip", there is a short in the 110 volt system. If it does not "trip", the converter is defective or the wires leading to the converter are shorted.
- 2. Plug into 110 and make sure the converter is getting 110 volts. (Place hand on converter and feel for vibration.)
- 3. Remove the 12 volt fuses from the fuse block in converter (A)\* and check as follows:

Take reading with 12 volt meter from the bus bar of converter to neutral lug (D) in converter. If 12 volts or above, the converter is okay. If less than 12 volts, converter is bad.

#### **TESTING BATTERY CHARGER**

- 1. Take reading with 12 volt meter across the battery post with converter plugged into 110 volts. If reading over 15 volts, the charger is overcharging and the converter is defective.
- 2. Disconnect the battery line at converter, take reading with 12 volt light or volt meter from red wire to neutral lug (C to D). Any reading of 6 to 14.2 volts, the charger is okay.

#### TESTING RELAY

- Plug into 110 volts and no "click" means the converter is defective because of a bad and open diode or bad relay.
- 2. If relay chatters, the converter is defective.
- 3. Plug into 110 volts shore line and if you hear a "click" in the relay, but there is no lights, the relay is dirty.

### BATTERY INSTALLATION

When installing the battery in the RV and the converter starts "clicking", the polarity of the battery is reversed.

#### CHECK WATER LEVEL IN BATTERY WEEKLY.

\*See Part II

April 14, 1975

B-W MANUFACTURERS INC 721 north webster street kokomo indiana 46901 area 317: 452-5444

## PHILLIPS POWER CONVERTER TEST PROCEDURES - PART II

° MI	A - CONVERTER OUTPUT - Circuits 1 - 3
	For POSITIVE leads to RV 12V motor and light circuits. Do not use higher amp fuse. RV CKT. 1 Amp
	RV CKT. 2 Amp
	RV CKT. 3 Amp
	B FUSED BATTERY CIRCUIT Circuit 4
	Fused battery line - for POSITIVE lead(s)
c - Lug for positive (+) lead to 12 Volt battery	to Radios, TV, Stereo, unfiltered Fluor.
D - Lug for negative (-) leads to CKTS 1-4 and	lights ONLY. DO NOT use for other equip.
12 Volt battery.	CKT. 4 Amp
E – 110 Volt AC wiring compartment. Observ color-code. Use 3-wire cable. Attach groun	d
to screw provided.	PR-6144-A

## PC-201-A-1 FTB 4 PHILLIPS Power Converter/Charger

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PC-301-A-1 FTB 5 PHILLIPS Power Converter/Charger PC-401-A-1 FTB 5 PHILLIPS Power Converter/Charger

to screw provided.



- C Lug for positive (+) lead to 12 Volt battery. B FUSED BATTERY CIRCUIT Circuit 5
- D Lug for negative (-) leads to CKTS 1.5 and 12 Volt battery.
- E 110 Volt AC wiring compartment. Observe color-code. If 3-wire cable used, attach ground to screw provided.

-	CONVERTER OUTPUT - Circuits 1 - 4
	For POSITIVE leads to RV 12V motor and
	light circuits. Do not use higher amp fuse.
	RV CKT. 1 Amp
	RV CKT. 2 Amp
	RV CKT. 3 Amp
	RV CKT. 4 Amp

Fused battery line - for POSITIVE lead(s) to Radios, TV, Stereo, unfiltered Fluor. lights ONLY. DO NOT use for other equip.

CKT.5 \_\_\_\_ Amp .....

#### PR-6155-A

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The PHILLIPS Limited WARRANTY PROGRAM covers each new PHILLIPS Power Supply for original owner for one year from date of purchase against defects in material or workmanship as indicated here. It agrees to repair or replace any such defects – without charge for parts or labor – provided the defective unit is returned, prepaid, to B-W MANUFACTURERS, INC., Kokomo, Indiana; within this one year period. This warranty applies only to original owner.

Responsibility is not assumed for damage due to accident, faulty wiring of the Power Supply to Recreational Vehicle electrical system, use of incorrect wire sizes in conjunction with the Power Supply, installation of oversize fuses – if fuse-panel utilized, or over-load of the Power Supply beyond the specified maximum continuous load limit. Also, responsibility is not assumed for any work performed on Power Supply by servicemen in the field.

If trouble does develop in conjunction with the PHILLIPS Power Supply, immediately contact our Customer Service Department at the address listed below. Repair work not covered by the above Warranty Program – and repair work for a secondary owner – will be made at a nominal charge.

Customer Service Department B-W MANUFACTURERS, INC., 721 N. Webster St. Kokomo, Indiana 46901

Telephone Area 317 452-5444

## INSTALLATION INSTRUCTIONS FOR PC-401-A-1 AND PC-401-A-2 POWER SUPPLIES

The PC-401-A-1 and PC-401-A-2 are designed for horizontal mounting in compartment which has at least 4.7 cubic feet or equivalent of area. Using this minimum size compartment, provide 76 square inches or more of ventilation and provide  $2\frac{1}{2}$  inches or more clearance on sides, 2 inches or more clearance on ends, and 6 inches or more clearance on top.

Wire the Power Supply according to the directions in the wiring compartment (behind the name plate).

I was just ready to mail this to you when your letter came. Thanks a lat. Dwill pend the operation and somice Finde. I down to you have it. ent had any trouble a lat the converting

harles. ked to you about into on 1977 PHILLIPS F Alane all of the deagrams to the coach. Be Ida & chensatees and I Un to due the peration ug you a CO ight OMBES une 26130 VILLAGE soulting. Case michide AMARILLO,



\*ADJUST TO 13.6-13.8 VOLTS AT BATTERY TERMINALS WHEN FULLY CHARGED.

UNIT NUMBER	TRANSFORMER	DIODES	THERMAL BREAKER-1	
PC-251-A-1				
PC-201-A-1	PR-6036	1N3492/PR6004	25 AMP.	
PC-301-A-1	PR-6062	1N3492/PR6004	35 AMP.	
PC-302-A-1	PR-6062	1N3492/PR6004	35 AMP	

POWER CONVERTER

SCHEMATIC, BASIC UNIT

B-W MANUFACTURERS, INC.



# "ADJUST TO 13.6-13.8 VOLTS AT BATTERY TERMINALS WHEN FULLY CHARGED.

VNIT NUMBER	TRANSPORMER	diopes	THERMAL BREAKER
FC-401-A-1	PR-GOBD	1 N3492/PR6004	50 AMPS.
PC-551-A-1	ER-6135	113492/286004	NONE ON EXTERIAL

POWER CONVERTER

SCHEMATIC REST. WYT