

Electrical

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Electrical System

The Airstream trailer has three electrical systems:

1. Exterior Lighting System
2. Univolt (Interior) Electrical System
3. 120 Volt Electrical System

The exterior lighting system and univolt electrical system utilizes a main low voltage harness assembly which is color coded to assist in trouble shooting circuits. This harness consists of the exterior circuit, main charge line, branch circuits and component signal wires. (Refer to pg 2-2 for brake electrical system).

The 120 volt electrical system is separated from the low voltage circuits in order to conform to state, federal and Canadian codes.

Operation, trouble shooting and servicing of the three electrical systems are discussed in the following section. Wire diagrams for each model are included to identify circuit routing and color codes.

Exterior Lighting System

The state, federal and Canadian governments require travel trailers to be equipped with specific exterior lighting.

The Airstream exterior lighting system consists of exterior lamps and reflectors, electrical harness circuits and a trailer to car connector. Proper descriptions and identifications of each lamp, reflector and components are shown in Fig. 2.

The exterior electrical harness wires illustrated in Figure 1 are wrapped in the same harness as the univolt interior harness. This harness is routed from the trailer's 7-way connector, through the fuse panel, vertical on the curbside of front window and into the multidome area. The circuits branch out from the multidome area to the exterior lighting. All splices in the harness are crimped, soldered and taped to insure continuous circuits. All wires to components are color coded. (See Fig. 2)

Each component has a "hot" wire and a ground return. The ground return is completed through the main ground circuit in the harness (white wire) or through the shell of the trailer. Both the main ground return and the shell are electrically connected to the 12 volt distribution panel grounding bar.

Trailers manufactured for sale in Canada have a different color coding of functions as shown in Fig. 3.

The most common failure in the exterior electrical system is an open circuit. An open circuit is an interruption in the current flow which may be in either the wire to the component or in the ground return. Check the following areas for open circuits:

1. Light bulb (filament open)
2. Loose or corroded connections at lighting device
3. Loose or corroded connections at 7-way connectors
4. Improper grounding at the lighting device

A continuity light or an ohm meter will help you isolate the point of the "open" on the circuit.

Another cause of failure is a short circuit usually resulting in a blown fuse or cycling circuit breaker at the power source. A short is usually caused by the wire coming in contact with a sharp edge. The sharp edge wears the wire's insulation away until the "hot" wire shorts to ground.

Another example of a short is in the 7-way connector: if a terminal screw in the 7-way connector becomes loose, the wire connector may come in contact with another terminal causing a short.

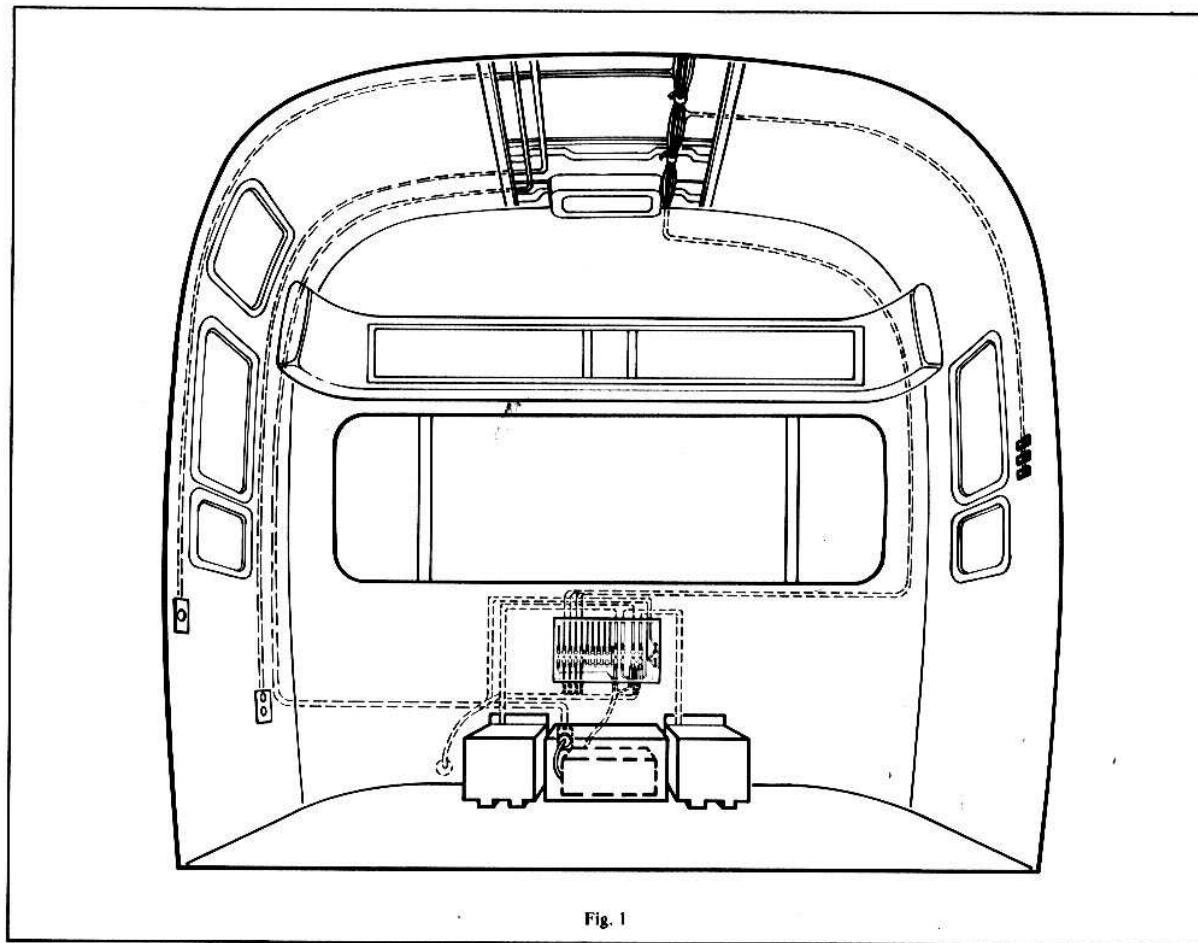


Fig. 1

12 Volt Exterior

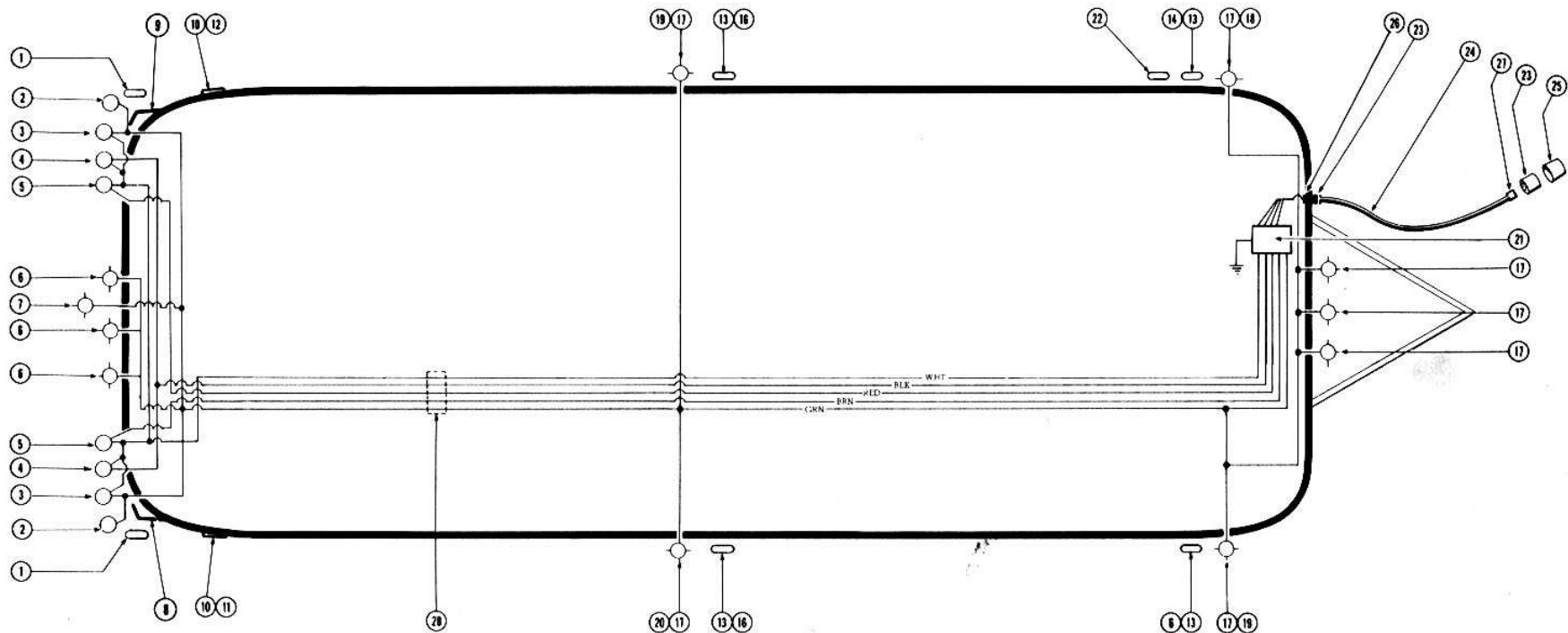


Fig. 2

No.	Part No.	Description
1	510105	Reflector - red
2	510104	Lamp - red
3	510160	Lamp assembly - tail
	510162	Lens - red
	380226	Gasket
4	510161	Lamp assembly - back up
	510163	Lens - clear
	380226	Gasket
5	510161	Lamp assembly - stop, turn
	510162	Lens - red
	380226	Gasket
6	510111	Lamp - red, rear identification
7	500053	Lamp - license plate (and bracket)
8	101200	Bezel - taillight - curbside
9	101201	Bezel - taillight - roadside
10	510204	Reflector - red
11	101185	Base (No. 11) - curbside rear reflector
12	101186	Base (No. 12) - roadside rear reflector
13	500096	Reflector - amber
14	101181	Base (No. 5) - roadside
15	101182	Base (No. 6) - curbside
16	101163	Base (No. 14) - intermediate reflector
17	510112	Lamp - amber, comb., front clearance - side marker front identification
18	101177	Base (No. 1) - roadside
19	101178	Base (No. 2) - curbside
20	101187	Base (No. 13) - intermediate
21	510347	Fuse panel housing
	510348	Fuse panel
	510349	Fuse panel cover
22	510175	Monitor - tail light
23	510177	Connector socket - 7 way
24	500017	Cable - 7 way,
25	380276	Rubber boot - 7 way
26	200289	Connector cover - 7 way
27	500007	Connector plug - 7 way
28	500281	Wiring harness - 7 way

7-WAY CONNECTOR SOCKET
(United States and Canada)

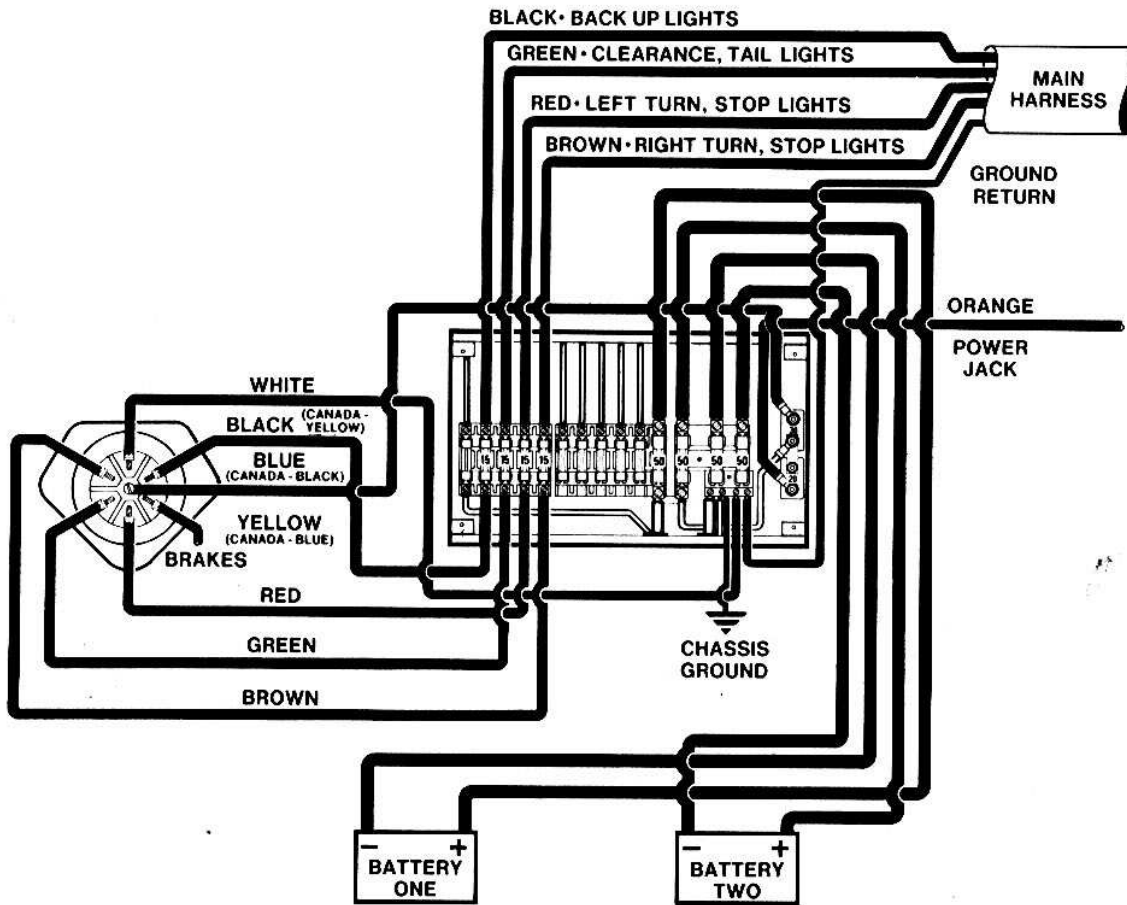


Fig. 3

Univolt System – Power Source

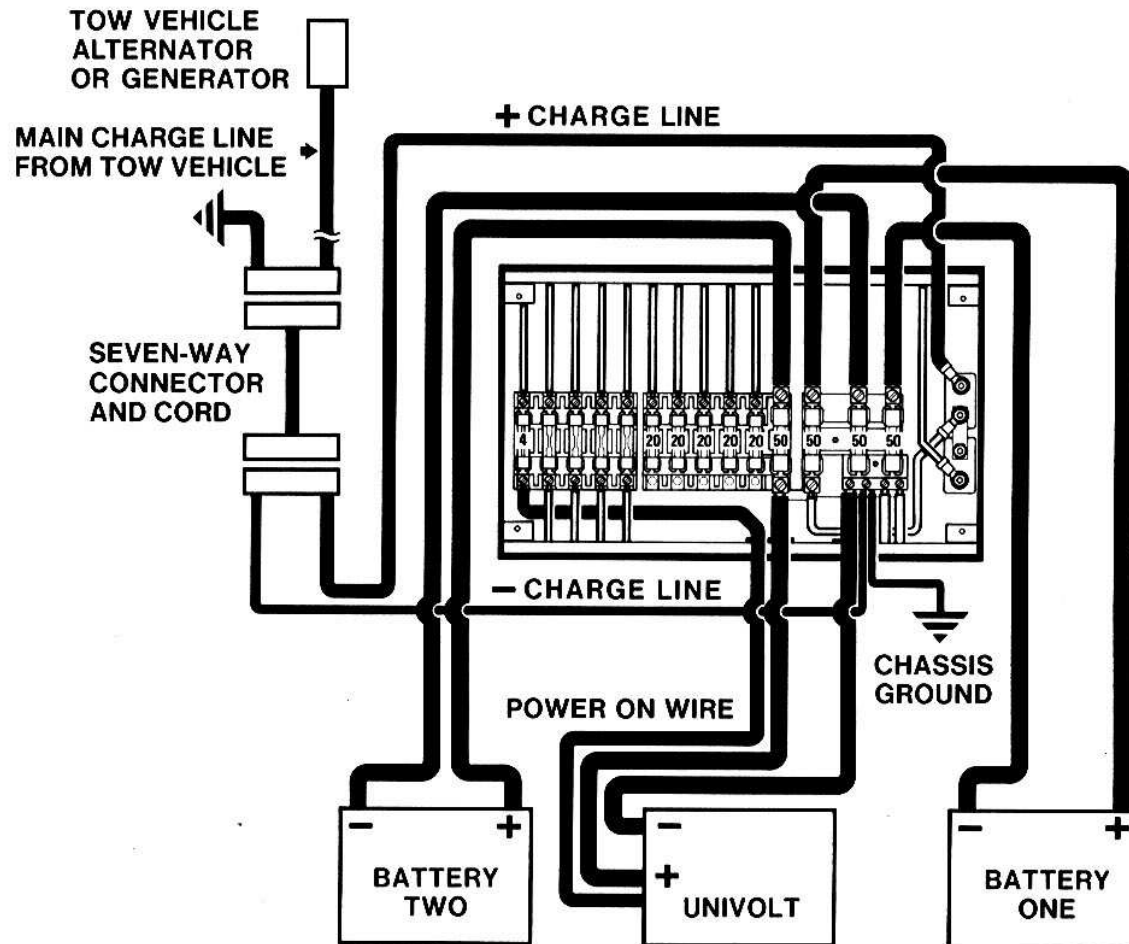


Fig. 4

Univolt Interior Electrical System

The univolt system is the interior low voltage electrical system which enables you to use the interior lights, fans, pumps and 12 volt appliances whether operating on self contained battery power or 120 volt city power.

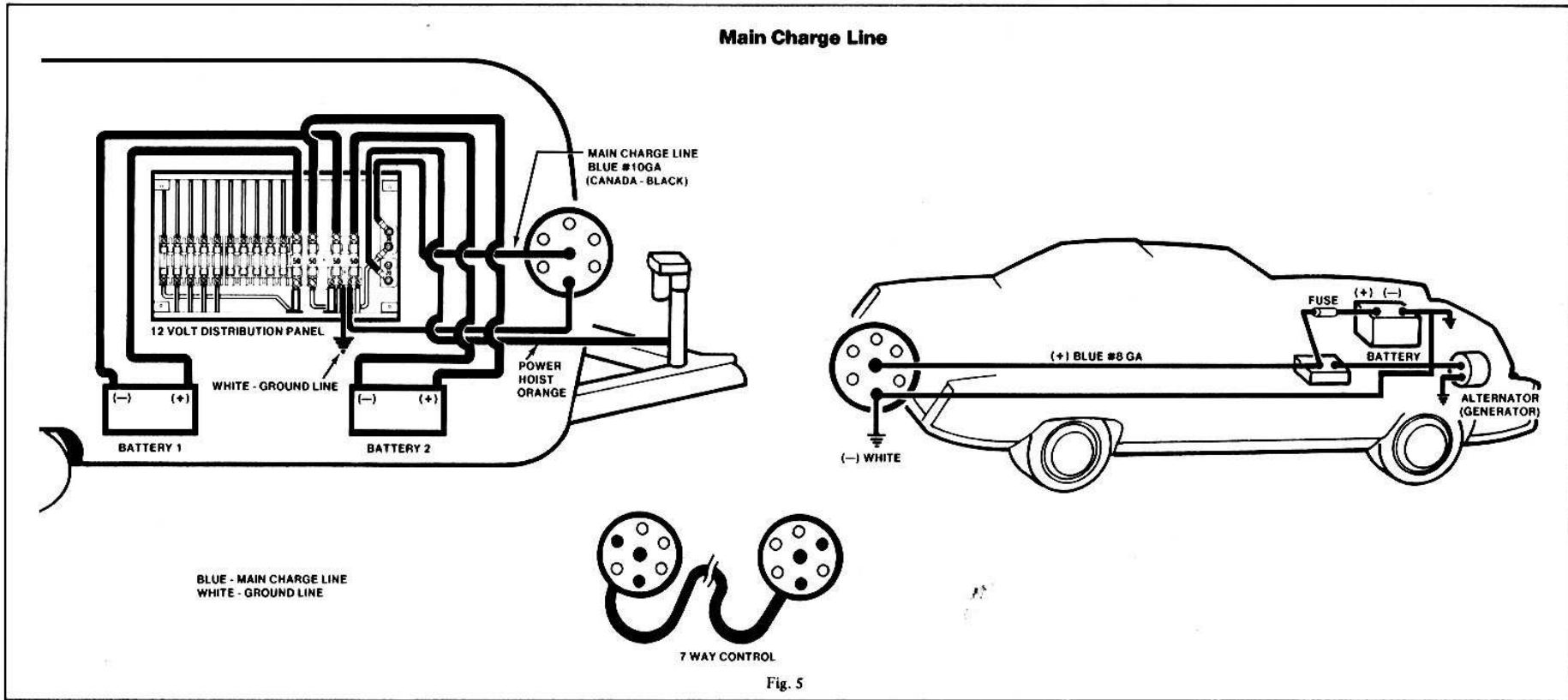
12 Volt Power Circuits

The current in the univolt system is 12 volts direct current (12 VDC), negative grounded.

Power sources which supply 12 VDC current to the system are as follows:

- A. Main Charge Line from Tow Vehicle
- B. Trailer Battery
- C. Univolt Converter

The power sources above are all electrically connected to the 12 volt distribution fuse panel which distributes current to five interior branch circuits (See Fig. 8). The five circuits provide power to operate all 12 volt DC lights, pumps, motors and appliances.



**Main Charge Line Power Source
(From Tow Vehicle)**

The main line circuit completes the path of current from the tow vehicle's generator or alternator to the trailer's battery as shown in fig. 5. The purpose of this circuit is to charge the trailer's battery.

In order to minimize voltage drop the tow vehicle's wire size should be No. 8 AWG or equivalent. If the tow vehicle charge line is smaller, a greater voltage drop will exist which will increase towing time necessary to charge the trailer battery(s).

Trailer Battery Power Source

The 12 volt trailer battery is connected in parallel to the Univolt system (see Fig. 6). It provides current to the interior lights, fans and 12 volt appliance when your trailer is disconnected from city power or when an overload of interior lights and fans exist with city power connected.

Charging of the battery is provided by the tow vehicles charging system or the "Univolt" converter.

A safe level of charge is a specific gravity reading of 1.225. A fully charged battery has a specific gravity of 1.250 to 1.280. Always use a hydrometer which has a temperature correction scale. Maintain a clean battery top and check terminals and cables for tightness and cleanliness. A dirty battery will dissipate its charge through surface contamination. Clean battery top with a damp cloth and dry thoroughly. The terminals should be tight and free of corrosion. To clean terminals, neutralize with a solution of baking soda, rinse in clear water, and dry. To insure maximum battery capacity on both charge and discharge, the battery terminals and the inside portion of the cable connector should be scraped or brushed until both of these surfaces are shiny bright. The cable connectors should then be reconnected to the battery and tightened. The complete assembly, battery post and cable connector should be coated with a heavy bodied mineral grease or petroleum. Important: Reconnect the battery cables to the correct battery posts. For example, if negative ground, the black cable should be connected to the negative (-) post and the red cable to the (+) post. The polarity may be determined by inspecting the battery post which is grounded on the tow vehicle, since it must always match the trailer. For example, if negative pole of the tow vehicle is grounded, the polarity of the trailer battery is negative ground.

Add water to cells as necessary. Do not fill battery above lower ring. As the battery is charged, the electrolyte expands, causing an overfilled battery to spill acid through the vents.

1. How to Use a Hydrometer

- a. Squeeze the soft rubber bulb and insert the nozzle in the cell. Release the bulb slowly, drawing electrolyte up into the barrel.
- b. Adjust the electrolyte level in the barrel so that the float rides free of the bottom but is not striking the top.
- c. Hold the hydrometer in vertical position, making sure that the float moves freely. Now read the scale at the level of the electrolyte in the barrel.
- d. Return Electrolyte to the cell from which it was removed. NOTE: Handle hydrometer carefully in making tests — guard against drops of acid falling on person, clothing or car. After completing test, flush hydrometer with clean water.

2. How to Use a Voltmeter

Open circuit voltmeters, designed for testing storage batteries, have scale ranges suitable for reading individual cell voltages.

Readings are obtained by pressing the prod points firmly into the post or cell connectors across each cell and observing the position of the voltmeter needle with respect to the scale. The proper polarity must be observed, i.e., the rigid prod (positive) attached to the meter makes contact with the positive post; the prod on the flexible lead (negative) contacts a negative post. Note that a cell connector must be regarded as positive when testing one cell, and negative when testing adjoining cell. (The cell connector connects the positive post of one cell with the negative post of an adjoining cell.)

Most batteries are made with buried cell connectors, i.e., they are covered with sealing compound. Voltage readings of batteries constructed in this manner are obtained by pressing the prod points through the sealing compound and contacting the cell connectors. After the test is made, the pierced sealing compound should be pressed back in place.

Caution: It is not recommended that a voltmeter be used to test batteries with buried connectors, unless the user is certain of the location of the proper cell connectors. Some 12-volt batteries have complex cell arrangements, making it difficult for the inexperienced to locate the proper connectors. If, through error, the voltmeter contacts two or more cells, possible damage will occur.

VOLTMETER TESTS

For greatest accuracy, these tests should be made on a battery that has not been charged (by the generator or otherwise) for 16 hours. If the battery has been charged, the headlights or similar electrical load should be turned on for 2 to 3 minutes, after which a reasonably good test may be made. With lights and all electrical accessories "off", read the voltage of each cell and record the readings.

INTERPRETATION OF TEST RESULT

Condition:

If the difference between the highest and lowest cell is .05 volts or more, the battery is nearing the end of its useful life and should be replaced. However, if the highest cell reads less than 2.04 volts, the test for condition is questionable. Recharge the battery and make the test again.

Examples:

Readings: 2.07; 2.06; 2.06; Condition: OK

Readings: 2.09; 2.02; 2.08; Condition: Worn-out

State of Charge:

Compare the voltage readings with the following:

State of Charge	Voltage Reading
100	2.10
75	2.07
50	2.04
25	2.01

Example:

Readings: 2.03; 2.04; 2.03; Half charged.

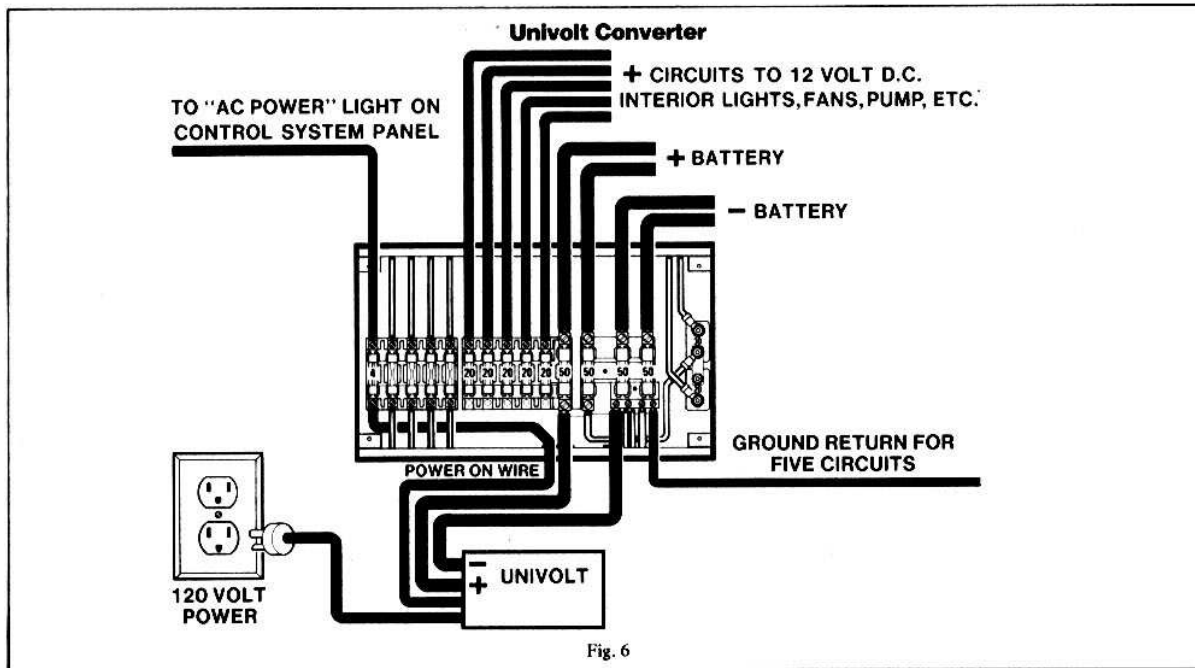


Fig. 6

Univolt Converter

The univolt converter transforms 120 volt alternating current (A.C.) into 12 volt nominal direct current (D.C.). This provides power to charge the trailer battery and to operate the 12 volt interior lighting, fans and appliances.

The converter is energized only when the trailer is hooked up to 120 volt city power.

Fig. 6 illustrates the converter's power source, converter and remote fuse panel.

Univolt Testing

The Univolt V may be tested when installed in the trailer with either the Newmark tester or the Triad tester.

The Newmark tester should be set on the Zener position only. The Triad tester has only one position.

- a. Confirm 120 volt power is going into Univolt.

- b. Remove all fuses from remote fuse panel.
- c. Connect black lead of tester to terminal marked "ammeter red only". (Any one of the four terminals on the negative side of univolt may be used.)
- d. Connect the red lead or tester to any fuse clip on the center aluminum bar of the fuse panel.
- e. The voltage must be within 13.8 and 14.2 volts. (The meter of the tester should be calibrated periodically.)
- f. If Univolt is not within these voltages, replace it.

Univolt Repair

The case cover to the univolt must not be removed. (There is high voltage within the case which is dangerous.) The Univolt should be returned to Airstream for repair.

Univolt Removal

1. Disconnect power cord for 120 volt supply.
2. Switch circuit breakers to off position.
3. Remove the front lounge (see page 4-12, 4-13 Front Travel Lounge Removal and Replacement), or open credenza (ambor door).
4. Remove screws securing Univolt cover, remove cover.
5. Disconnect lead-in wires running from Univolt assembly to 12 volt fuse distribution panel.
6. Remove four screws mounting the Univolt assembly to the floor.
7. Remove the Univolt assembly.
8. To install, reverse the removal procedures.

12 Volt Distribution Fuse Panel

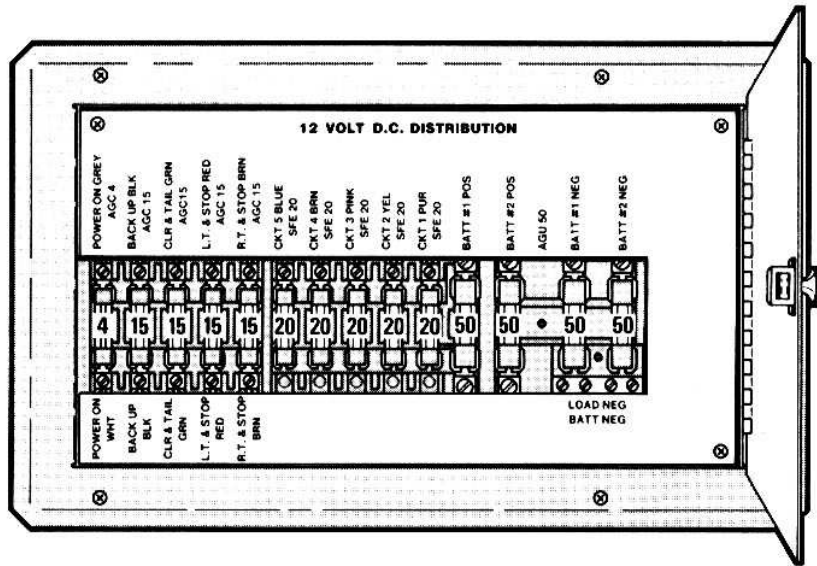


Fig. 7

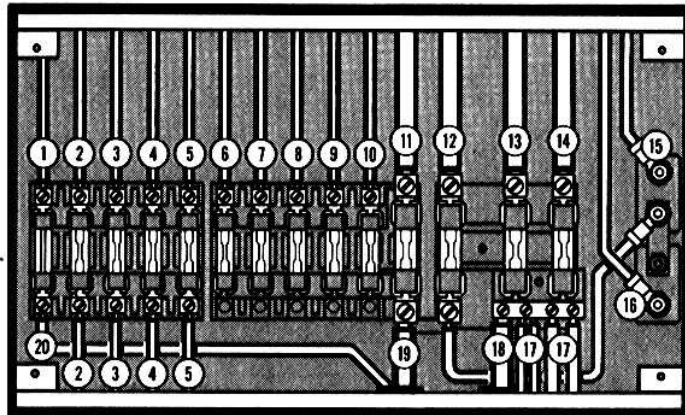


Fig. 8

12 Volt Distribution Fuse Panel (Remote Fuse Panel)

All connections of wires to the fuse panel must be clean and tight.

Prior to replacing fuses make sure inside surfaces of fuse clips are clean and squeeze clip to provide adequate tension against the fuse. Dirt or inadequate clip tension will produce a greater resistance resulting in heat and voltage drop.

Branch Circuits

The five interior branch circuits distribute 12 volt D.C. power from the univolt's remote fuse panel to the interior lights, fans, water pump and other 12 volt appliances. Each circuit is protected by a 20 amp fuse in the remote fuse panel.

Figures 9 - 10 are branch circuit schematics illustrating color coding, routing and identifies components on each circuit.

No. Description

- 1 Power on, Gray
- 2 Back up light, Black
- 3 Clearance and tail light, Green
- 4 Left turn and stop light, Red
- 5 Right turn and stop light, Brown
- 6 Circuit No. 5, Blue
- 7 Circuit No. 4, Brown
- 8 Circuit No. 3, Pink
- 9 Circuit No. 2, Yellow
- 10 Circuit No. 1, Purple
- 11 Battery No. 1, positive
- 12 Battery No. 2, positive
- 13 Battery No. 1, negative
- 14 Battery No. 2, negative
- 15 Main 12 volt charge, Blue
- 16 Power jack, Orange
- 17 Ground, White
- 18 Univolt, negative
- 19 Univolt, positive
- 20 Power on, White

Locating Shorts and Opens

The key in locating shorts and opens is isolation. The first step is to isolate circuit with the short or open and then isolate the section of the circuit with the fault. Once the section is identified, the specific problem can be located. The cause may be a loose or corroded connection, cut wire, worn insulation, defective component, etc. The following paragraphs describe methods of isolating shorts and opens. There are several other approaches that may be used; however, these may be used as a guide.

Shorts

1. Locate circuit which has short by noting fuse blown.
2. Remove fuses and open all switches, and check for continuity between (+) 12 volt wire of shorted circuit and ground. (If it cannot be determined if switch is in open position, remove lead from switch.) Continuity to ground indicates there is a short.
3. Remove leads of shorted circuits from univolt and components one at a time. After disconnecting each component, check continuity of the +12 volt wire to ground. If there is no continuity, the short is in the component removed. If continuity still exists, continue with steps below.
4. Inspect leads carefully where they pass through the skin or near sharp edges.
5. Note objects attached to skin after manufacturing. The mounting screws or rivets may be causing the short.
6. Remove multidome to expose main body of harness. Inspect harness for cause of short, such as rivets or screws in harness or evidence of drilling.
7. If short cannot be found cut circuit into sections, checking each section for continuity. Short can be isolated by this method.
8. Examples of shorts are:
 - a. The (+) 12 volt wire contacting (-) negative wire or grounded surface.
 - b. Internal short in a 12 volt component or appliance.

Opens

1. Check all components on circuit which has open. If all components are without power, begin to look for open on distribution panel.
2. Check for voltage on each side of the fuse. Sometimes a fuse has an open even though it is visually good. Check for tightness of fuse clip to fuse.
3. After inspecting all accessible wire on circuit for opens, remove multidome. Remove tape and inspect splices for poor connection.

A continuity light is a useful tool in locating an open. Each section of circuit can be checked for continuity. By a process of elimination the open may be found.

5. Examples of open are:

- a. Wire is cut.
- b. Connector falls off component's terminal.
- c. Loose or corroded connection.
- d. Contacts in switch do not touch.

12 Volt Electrical - Rear Bath

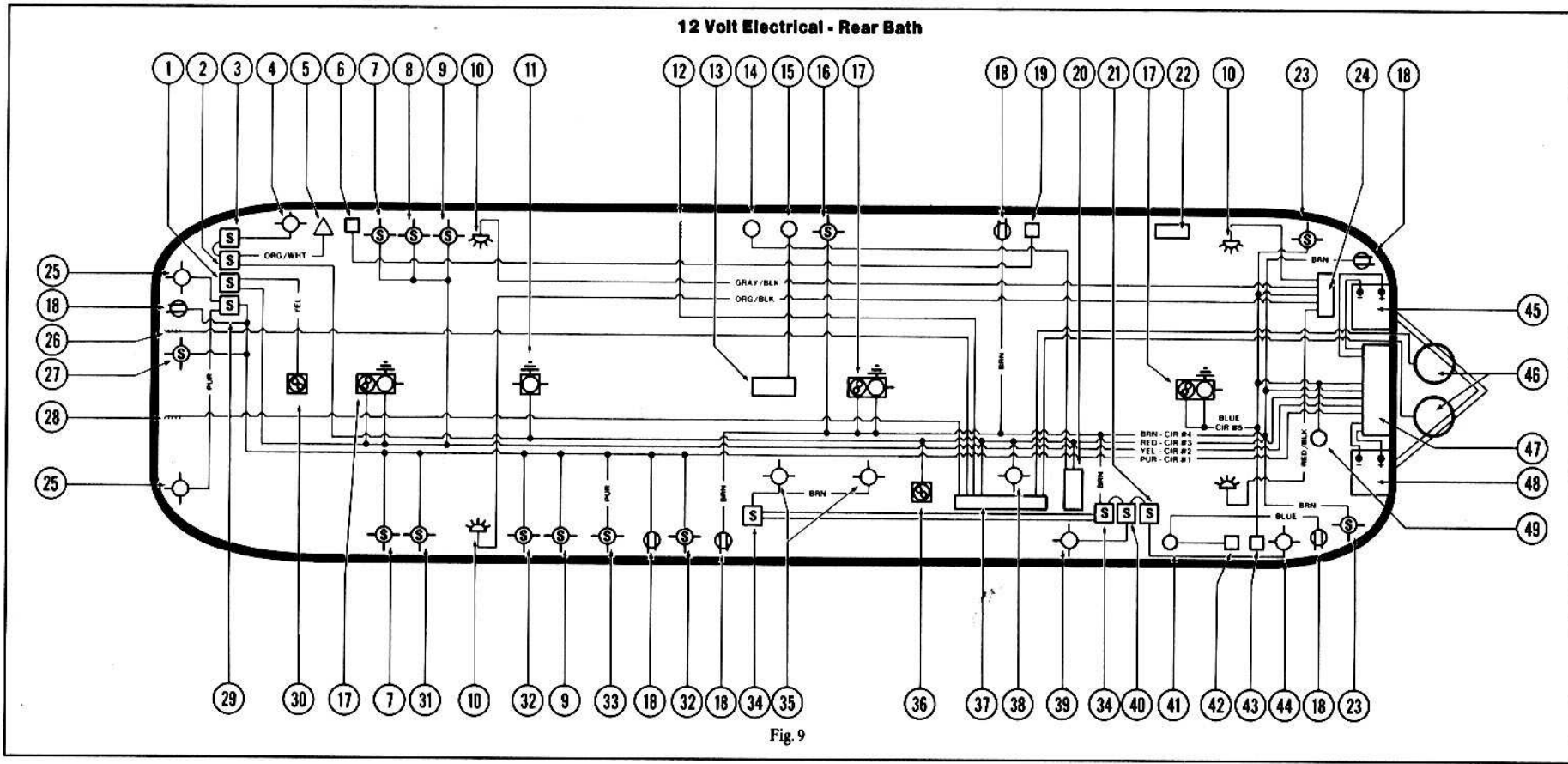


Fig. 9

No.	Description	No.	Description	No.	Description
1	Bathroom exhaust fan switch	12	Fresh water tank probe harness	25	Bathroom light
2	Water pump switch	13	Air conditioner	26	Main holding tank probe harness
3	Bathroom vanity light switch	14	Furnace control	27	Trunk light
4	Bathroom vanity light	15	Air conditioner control	28	Aux. holding tank probe harness
5	Water pump	16	Micro wave cabinet light	29	Bathroom light switch
6	Telephone wire inlet	17	Ceiling fan & light	30	Bathroom exhaust fan
7	Wardrobe light	18	12 volt outlet	31	Bed light (Twin)
8	Bed light	19	Telephone jack	32	Closet light
9	Compartment light	20	Furnace	33	Vanity light (Double)
10	Speaker	21	Flood light switch	34	Galley roof locker light switch
11	Ceiling light	22	Tail, stop, and turn light monitor	35	Galley roof locker light
		23	Reading light	36	Range exhaust fan
		24	Radio/stereo/tape deck	37	Solid state control panel
				38	Oven light
				39	Step light
				40	Step light switch
				41	Door bell button
				42	Door bell
				43	TV antenna control
				44	Flood light
				45	Battery No. 2
				46	L.P.G. tank
				47	12 volt distribution panel
				48	Battery No. 1
				49	Digital clock

12 Volt Electrical - Center Bath

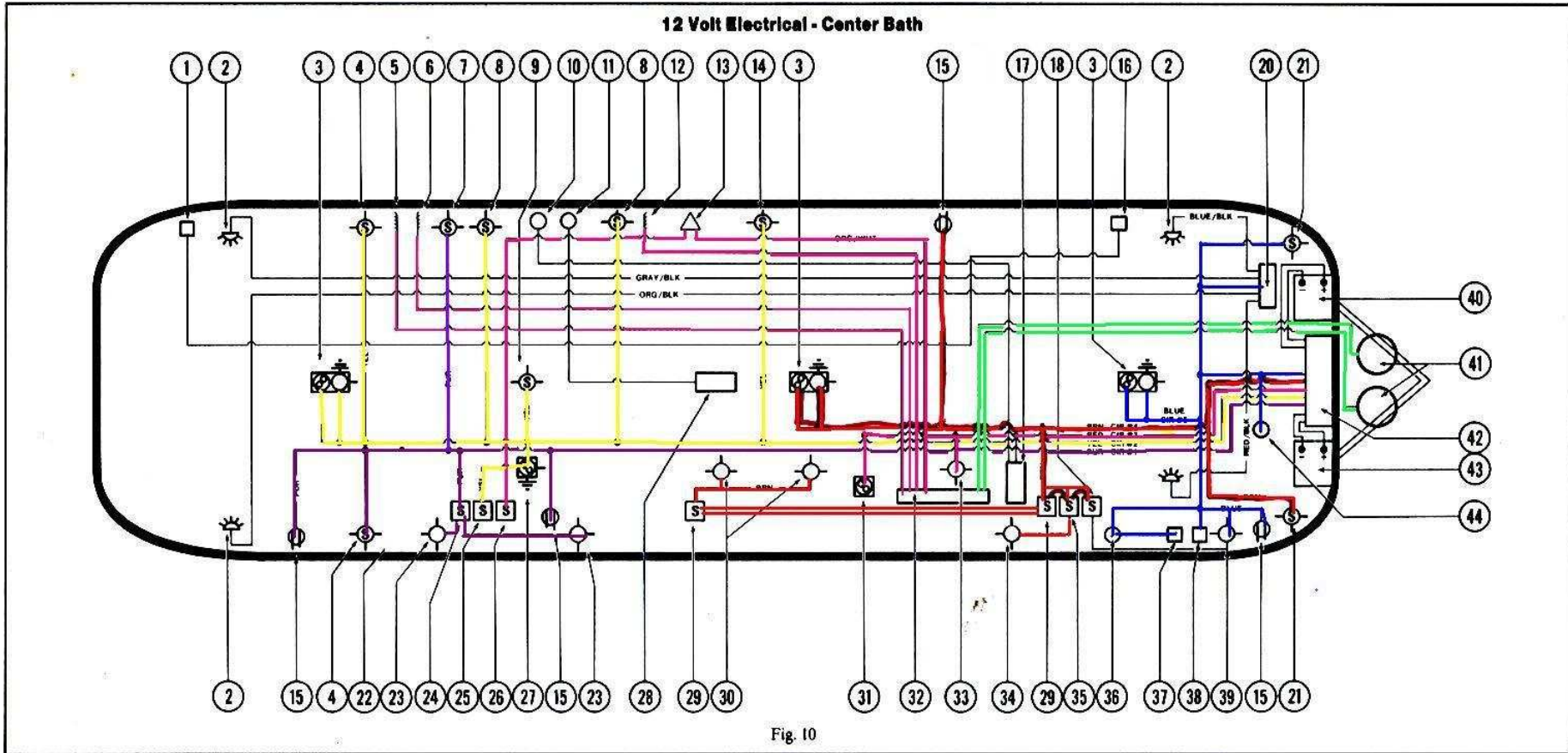


Fig. 10

No.	Description	No.	Description	No.	Description
1	Telephone wire inlet	11	Air conditioner control	35	Step light switch
2	Speaker	12	Fresh water tank probe harness	36	Door bell button
3	Ceiling fan & light	13	Water pump	37	Door bell
4	Compartment	14	Micro wave cabinet light	38	TV antenna control
5	Main holding tank probe harness	15	12 volt outlet	39	Flood light
6	Aux. holding tank probe harness	16	Telephone jack	40	Battery No. 2
7	Bedroom light	17	Furnace	41	L.P.G. tank
8	Closet light	18	Flood light switch	42	12 volt distribution panel
9	Ceiling light	19	Tail, stop and turn light monitor	43	Battery No. 1
10	Furnace control	20	Radio/stereo/tape deck	44	Digital clock
		21	Reading light		
		22	Bed light (Twin)		
		23	Bathroom light		
		24	Bathroom light switch		
		25	Bathroom exhaust fan switch		
		26	Water pump switch		
		27	Bathroom exhaust fan		
		28	Air conditioner		
		29	Galley roof locker light switch		
		30	Galley roof locker light		
		31	Range exhaust fan		
		32	Solid state control panel		
		33	Oven light		
		34	Step light		

Rear Lamp Monitor System

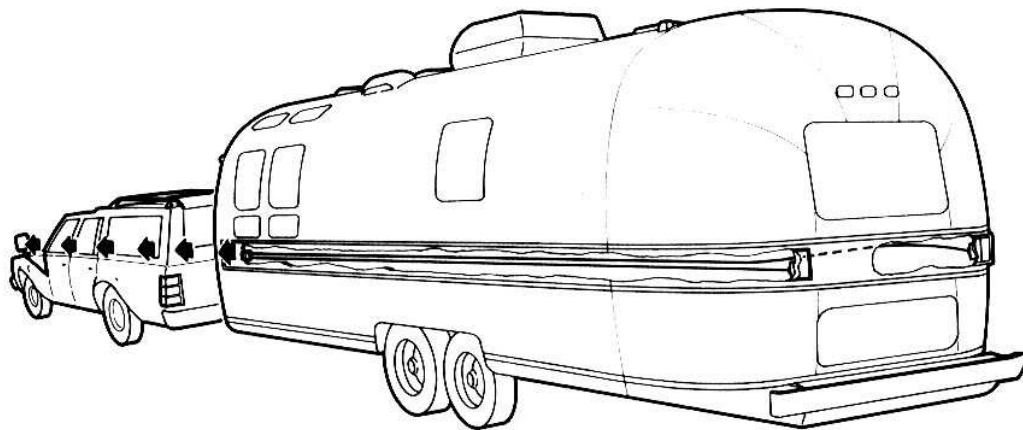
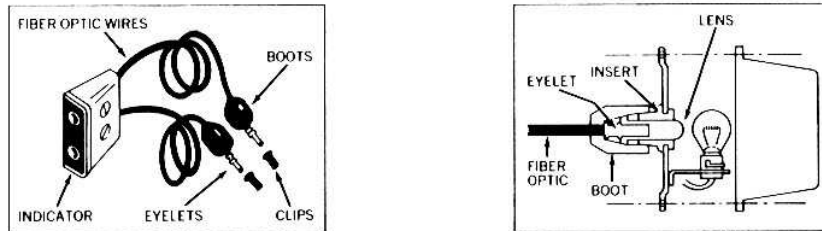


Fig. 11

Rear Lamp Monitor System

The rear lamp monitor uses fiber optic wire which carries light in somewhat the manner that other wires carry electricity. One end of the wire is pointed at the filament of the lamp bulb and the other end is pointed toward the driver's rear view mirror. Light from the lamp filament enters the wire and travels through it to the other end so the driver sees a red glow when the lamp is functioning.

Rear Lamp Monitor Installation

The red lenses and the ends of two wires are held in a molded retainer designed to seal out dirt and water. A molded plastic cover fits over the retainer for additional protection. The assembled parts are generally referred to as the "indicator."

The indicator is attached with two screws to the driver's side of the trailer with the red lens aimed at the outside rear view mirror. It should be located as near the rear as practical.

If the trailer has a trunk space, it is easiest to mount the indicator on the side adjacent to the trunk space. This provides easy access for running the light wires.

The position of the indicator must be visible in the rear view mirror, it must be right for the screws, and it must be right for the hole for the entrance of the wires into the vehicle.

Do not place the indicator in an extremely low position as this might permit the accumulation of mud and dirt during very bad weather.

When the approximate location of the indicator has been decided, use the template supplied to determine the exact location of the screw and wire holes. The light from the indicator is very directional so the template should be used to insure that the indicator is pointed directly at the rear view mirror. Sight along the "V" at the mirror and mark the position for the two screw holes and also the 3/8" hole for the two wires (or if you prefer, the two 1/4" holes for inserting each wire separately.)

When the holes have been marked and drilled, feed the two wires from the outside into the trailer through the 3/8-inch hole (or the two optional 1/4-inch holes) and using screws or bolts, attach the indicator firmly in place. It is sometimes desirable to seal the wire holes with a caulking compound.

The wires can be routed to the tail lamps the same as electrical wires and clamped with several precautions. During installation, the ends of the wires must be protected from oil, water, dirt, grease and other materials that would interfere with the flow of light. The wire should not be crushed by hammer blows, under clamps or by other means. The wire will withstand 40 pounds pull, will withstand temperatures up to 185°F. and can be bent at a radius exceeding four times its own diameter. Do not attempt to cut and splice the wire. Any excess wire can be looped or coiled and placed in a safe area.

In the case of a trailer that does not have a trunk, the routing of the wires should be planned before the indicator is installed to assure that the routing does not exceed the length of the wires. It is sometimes necessary to go completely through the wall and route the wires in a visible area. Other times, they can be routed inside a cupboard or under the floor. Differences of construction and location of equipment make it important to determine the routing of the wires as the first step of the installation.

Solid State Control System Panel

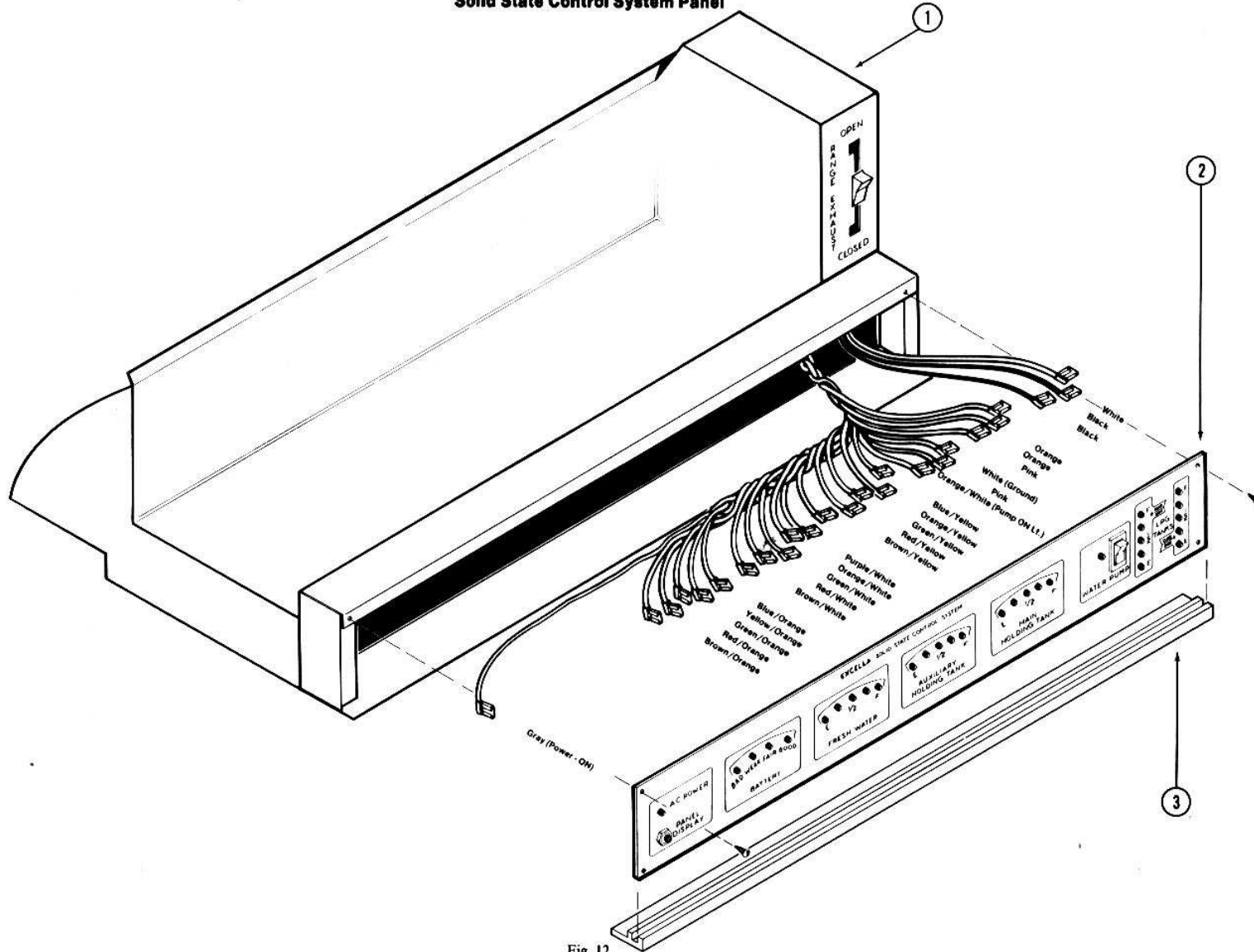
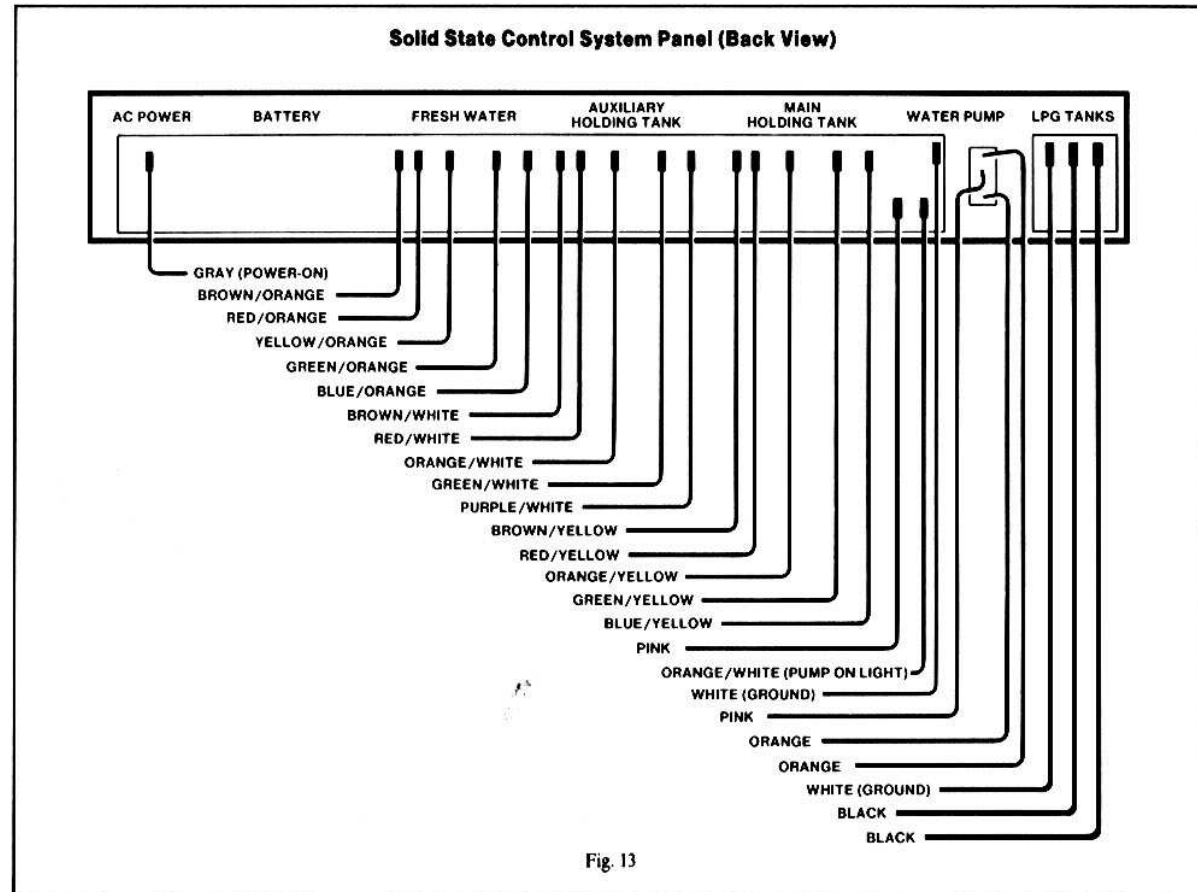


Fig. 12

No.	Part No.	Description
1	690125	Range exhaust hood assembly
2	500474	Excella solid state control system panel
3	100097	Curtain track

Solid State Control System Panel Removal and Replacement

1. Disconnect 120 volt inlet.
2. Disconnect batteries.
3. Remove screws attaching control panel to range exhaust hood.
4. Lift control panel up to clear lower extrusion, pull out to expose wire connections.
5. Disconnect all wires from back of panel, remove control panel.
6. For installation, reverse removal procedures.



Water, Holding and L.P.G. Tanks Wiring Diagrams

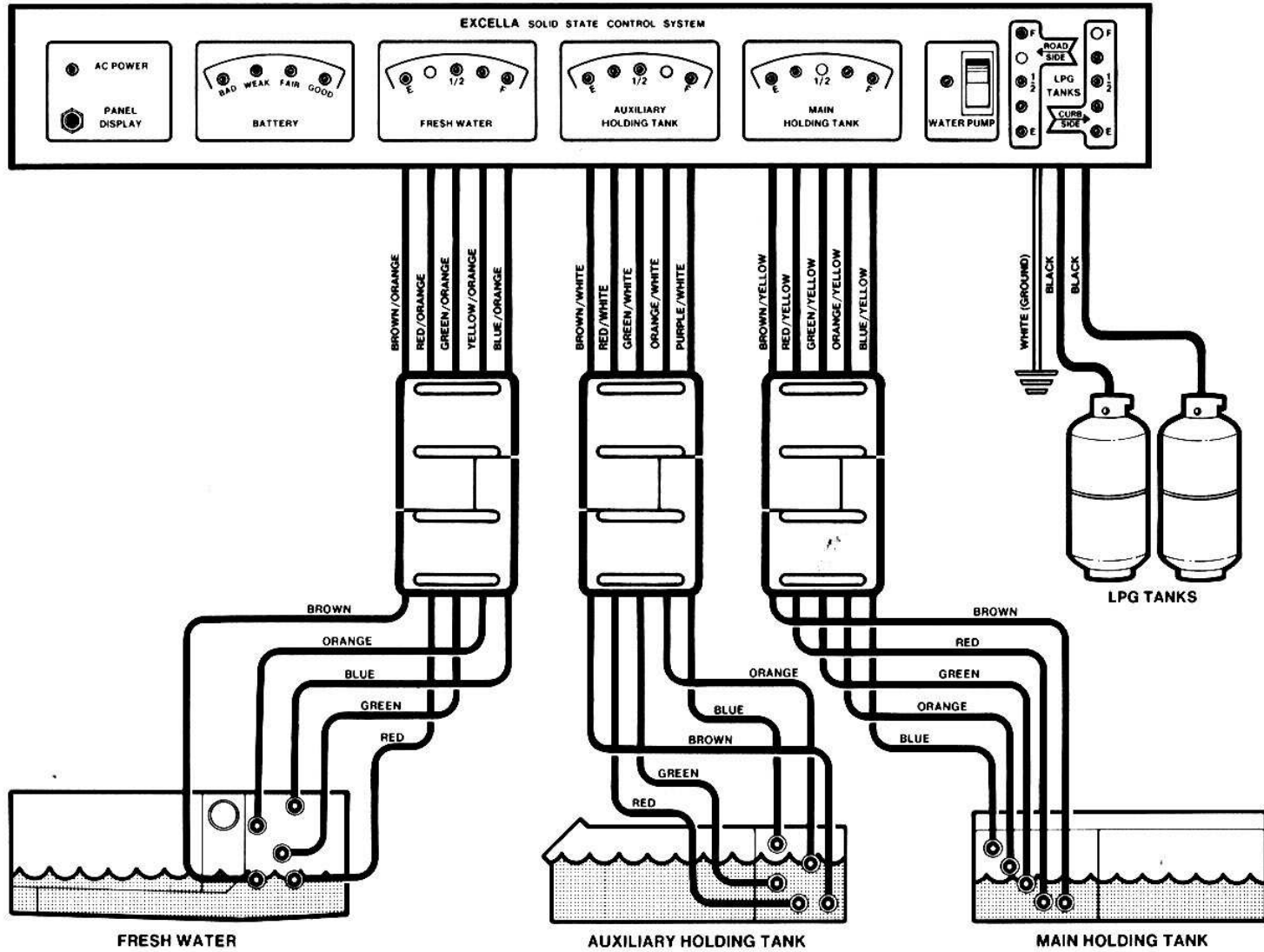
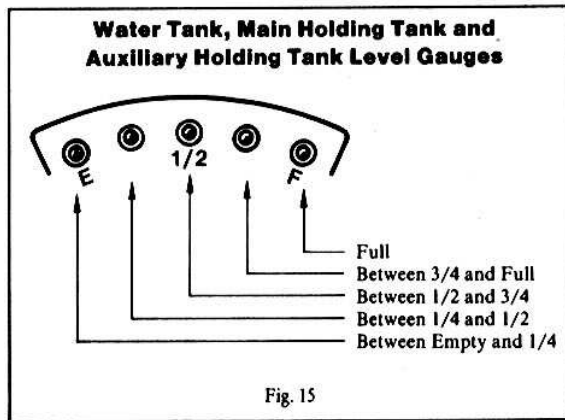


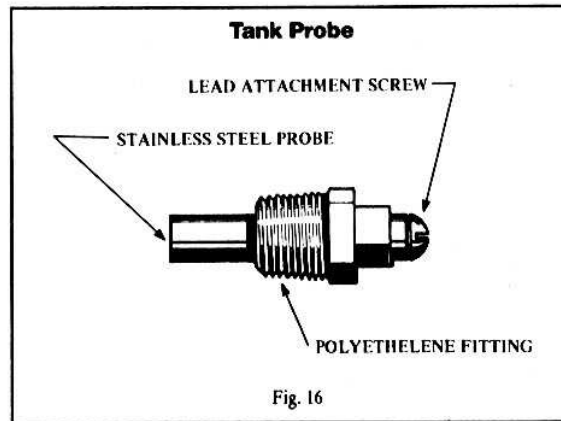
Fig. 14



Water Tank, Main Holding Tank and Auxiliary Holding Tank Level Gauges

Operation

1. The lights indicate the amount of liquid in their respective tank (see Fig. 15).
2. Fig. 14 illustrates the amount of liquid in the tanks for each of the five positions.



Tank Probe

Operation

1. Each tank has one common probe and four additional probes at specific levels in the tank.
2. The stainless steel pin of the probe is exposed to the interior of the tank.
3. Continuity of the level indicator circuitry is completed when the liquid contacts both the common probe and the probe set at the specific level. Probes are placed at the 1/4, 1/2, 3/4 and full level.

Maintenance

1. Accumulations of oxides, dirt, etc. may build up on the probe pins thus increasing the resistance between the common probe and level probes. However, excessive resistance will require the probe to be removed and cleaned, or replaced with a new probe.

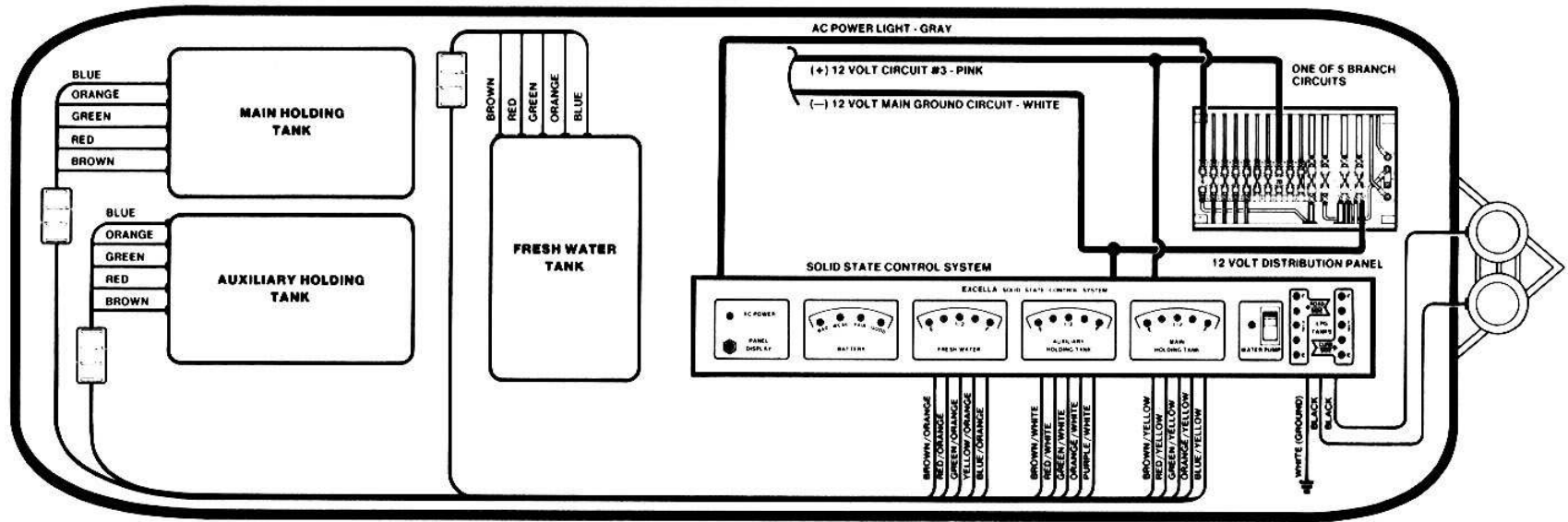
2. The waste tank probes are located adjacent to the slide valve except in the L.Y. main holding tank where the probes are accessible from the interior of the bathroom wardrobe. The water tank probes are adjacent to the water inlet and drain fittings.

3. The probe assemblies may be removed by rotating the probe assembly counter clockwise. The probe body has a square head for an open end wrench.

Testing

1. Drain tank completely.
2. With tanks empty, push display button. If any of the lights light up, the problem is a dirty or defective probe. Remove probe and clean or replace as necessary.
3. If none of the lights light up when the display button is pushed, check the display lights as follows:
 - a) Connect a wire from the common probe (brown lead) to the empty probe (red lead). If the empty light lights up when the display button is pressed, the circuit and lights are okay.
 - b) Repeat this procedure for each probe circuit. If any light fails to light up, check the wire leading to the control panel for shorts or opens. Repair or replace as necessary.
 - c) If the problem is in the control panel, replace the entire panel.

Probe Circuit of Solid State Control System Panel



Tracer colors in wires from control panel.

Fig. 17

Combination Ceiling Light & Vent Assembly

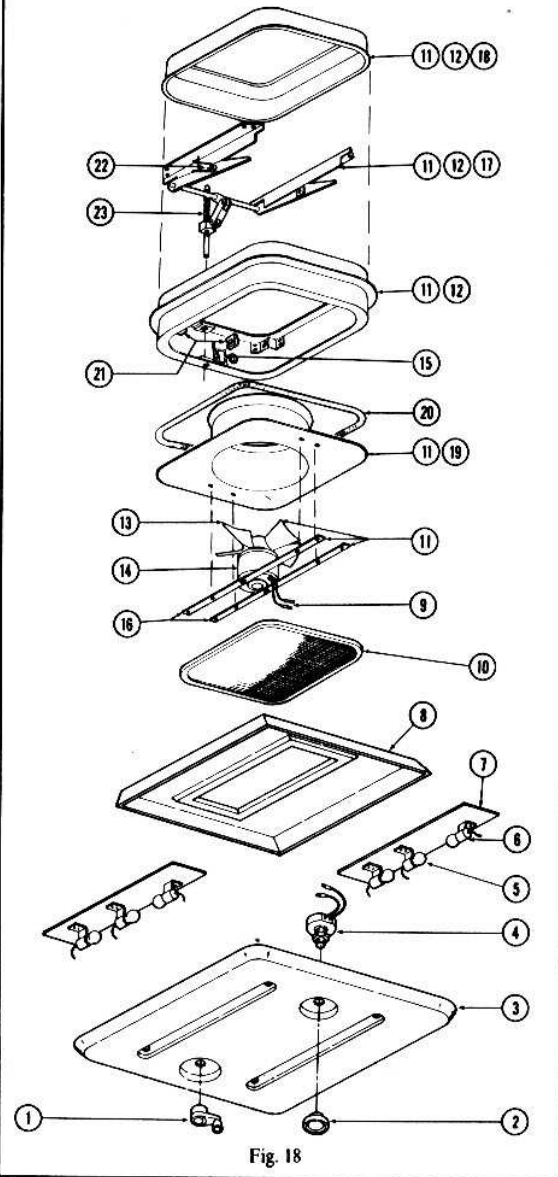


Fig. 18

No.	Part No.	Description
1	510233	Fan crank
2	380306	Knob, light
3	201362	Ceiling light shade
4	510195	Switch, 3 pos.
5	500029	Bulb 1141 - IF (frosted)
6	500030	Lamp socket
7	101383	Aluminum .032" x 12" x 2 1/2"
8	201362	Reflector plate base
9	500031	Terminal, bullet
10	101129	Screen assembly
11	380232	Vent w/fan motor
12	380233	Vent w.o/fan motor
13	510227	Fan blade
14	510228	Fan motor (U.S.)
	510295	Fan motor (Canada)
15	510229	Fan switch
16	510230	Fan mounting
17	510231	Vent linkage assembly
18	101173	Vent cover
	101176	Vent cover solar dome
19	510232	Vent shroud
20	365006	Gasket, vinyl foam tape
21	380638	Support blocks
22	380639	Spring, vent mechanism
23	380640	Elevator screw

Ceiling Light Shade Removal

1. Remove light switch knob by pulling down.
2. Remove nut on switch's shank.
3. Remove screw from vent handle and remove handle.
4. Remove screws located at edge of center grill.
5. Lower shade.

Bulb Replacement

1. Remove shade to expose bulb and socket assemblies.
2. Apply slight pressure on bulb toward socket and turn counter-clockwise approximately 1/8 turn. Release pressure on bulb and remove bulb.
3. Reverse procedure for installing bulbs.

Light Switch Replacement

1. Remove shade.
2. Remove nut which secures switch to bracket.
3. Disconnect wires from switch to lamp sockets.
4. Cut and strip leads of new switch and attach to lamp socket leads with wire nuts.

Reflector Plate Replacement

1. Remove shade.
2. Remove screws that secure reflector plate to multidome.
3. Disconnect light leads from harness at the quick disconnect connectors.
4. Lower plate assembly.

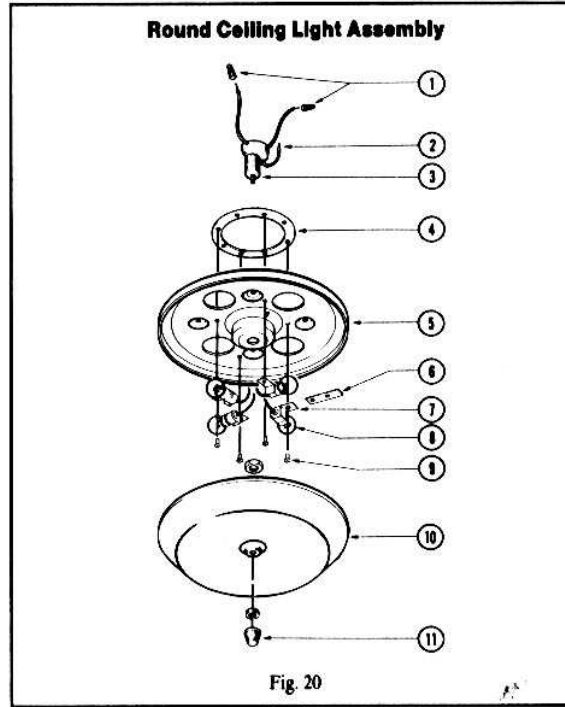
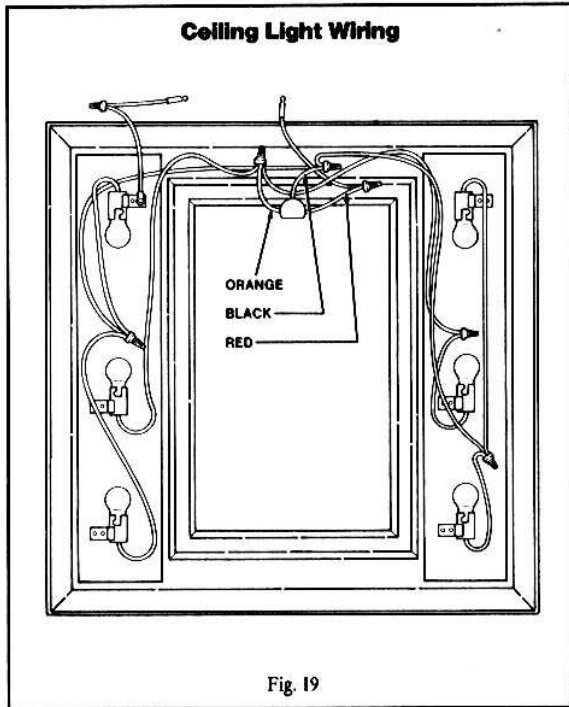
Ceiling Fan Replacement

1. Remove shade.
2. Remove reflector.
3. Remove rivets which secure fan bracket to vent flange.
4. Lower fan motor and shroud assembly.
5. Disconnect fan's wire leads from micro switch and harness at quick disconnect connectors.
6. Remove brackets and fan blade from motor.
7. Reverse steps for re-installation.

Micro Switch Replacement

1. Remove shade, reflector plate and fan/shroud assembly.
2. Remove two oval head screws on body of micro switch which secure it to vent frame.
3. After installing new micro switch, adjust switch's leaf by bending. Fan switch should "close" when vent crank is approximately 1/2 revolution from full open position.

Note - Wiring diagram page 8-20



No.	Part No.	Description
	500028	Round ceiling light assembly
1	500073	Wire nut 71-B
2	600031	Bullet terminal
3	500063	Switch, 3 position
4	380209	Aluminum ring
5	200038	Base, ceiling light
6	100001	Ground strap, aluminum .032" x 1/2" x 1 1/4"
7	500030	Standard base socket w/pig tail
8	500094	Lamp No. 93
9	330020	Rivet
10	200039	Lens, ceiling light
11	380307	Knob, light

Light Lens Removal

1. Pull center knob off switch shaft.
2. Unscrew knurled ring from switch shaft.
3. Remove lens.

Bulb Replacement

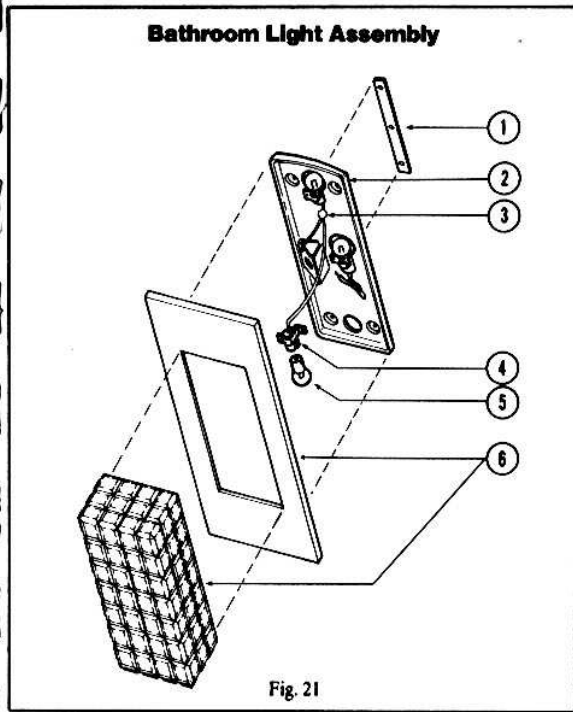
1. Remove shade to expose bulb and socket assemblies.
2. Apply slight pressure on bulb toward socket and turn counter-clockwise approximately 1/8 turn. Release pressure on bulb and remove bulb.
3. Reverse procedure for installing bulbs.

Light Switch Replacement

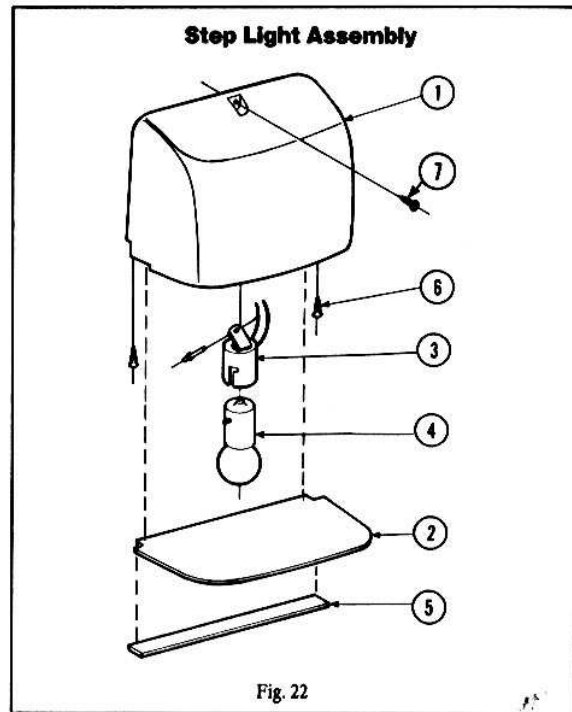
1. Remove shade.
2. Remove nut which secures switch to bracket.
3. Disconnect wires from switch to lamp sockets.
4. Cut and strip leads of new switch and splice to lamp socket leads.

Reflector Plate Replacement

1. Remove shade.
2. Remove screws that secure reflector plate to multidome.
3. Disconnect light leads from harness at the (quick-disconnect) connectors.
4. Lower plate assembly.



No.	Part No.	Description
1	101387	Ground strap
2	200041	Plastic base
3	510274	"Scotch lock" No. 560
4	510399	Lamp socket assembly
5	510314	Bulb, 25w-12 volt
6	500381	Base close out
7	500081	Switch, #574T white (not shown)



No.	Part No.	Description
	500067	Step light assembly
1	101323	Casting, step light
2	201185	Lens, step light
3	500093	Lamp socket w/bracket No. 10-08
4	500029	Bulb, 1141
5	365010	Foamstick - 6-1/8"
6	320038	Screw No. 6 x 1/2" P.H. Phillips
7	380225	Screw No. 6 x 3/4 stainless steel

Step Light Assembly Bulb Replacement

1. Remove two screws which retain light housing to main door jamb's eyebrow.
2. Remove screw which secures rear of housing to exterior skin.
3. Lift housing and slide lens out.
4. Replace bulb.
5. Prior to re-assembly, seal around wire at hole in skin.

Bathroom Light Lens Removal

1. Remove two screws holding shade to base.
2. Remove lens.

Bulb Replacement

1. Remove shade to expose bulb and socket assemblies.
2. Apply slight pressure on bulb pushing in inward, turn counter clockwise about 1/4 turn and remove.
3. Reverse procedure for installation.

Reflector Base and Switch Replacement

1. Disconnect 12 volt power to light by removing fuse.
2. Remove lens.
3. Remove four screws attaching base to trailer skin, pull out and disconnect harness wires from switch.
4. Remove base.
5. Remove knurled ring holding switch to base.
6. Disconnect wires from switch to bulbs, remove switch.
7. For installation, reverse removal procedure.

Halo Light (Galley & Vanity)

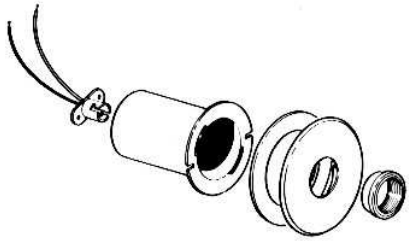


Fig. 23

Part No.	Description
500375	Halo light (galley & vanity)

Galley Light

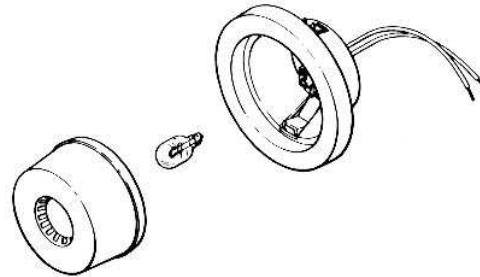


Fig. 24

Part No.	Description
510356	Galley light
510337	Bulb, G.E. No. 912

Reading Light

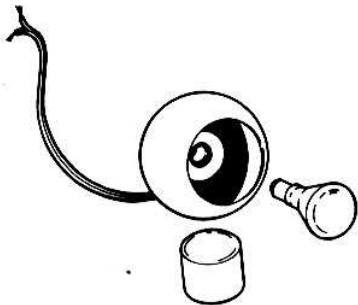


Fig. 25

Part No.	Description
510310	Reading light

Access Compartment Light

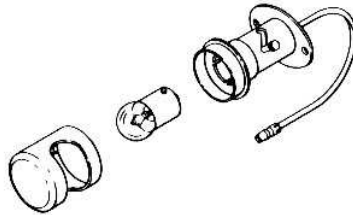
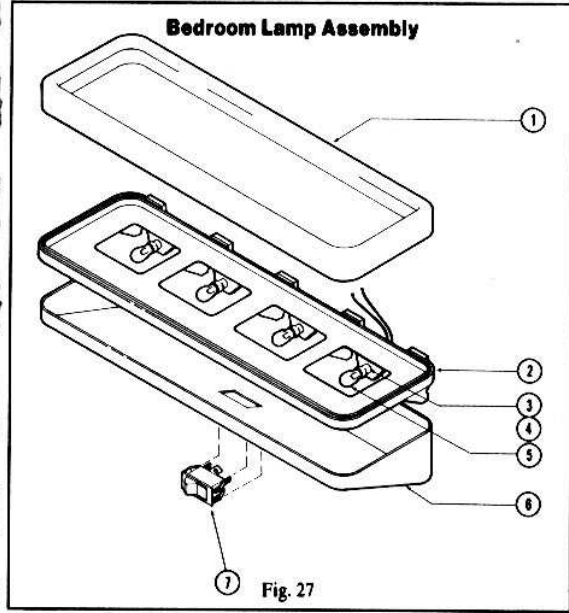


Fig. 26

Part No.	Description
510132	Access compartment light
510121	Bulb, G. E. No. 67

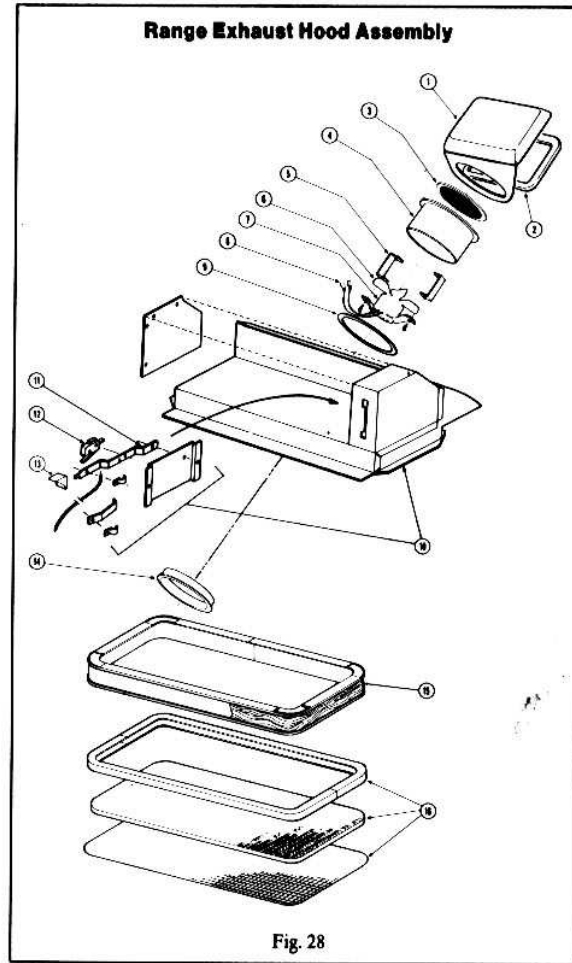


No.	Part No.	Description
	510344	Bedroom light assembly - CS
	510345	Bedroom light assembly - RS
1	201402	Plastic lens, top
2	101717	Lamp base, casting
3	510336	Bulb holder, vendor 9200
4	201404	Mounting clip
5	510337	Bulb, GE 912
6	201403	Plastic lens, bottom
7	500018	Rocker switch

Bulb Replacement

1. Remove screws located in top at both ends.
2. Depress lens in order to snap out of housing.
3. Replace bulb.

NOTE: International Center Bath double bed reading light not shown, Part No. 510106.



No.	Part No.	Description
1	510156	Vent shroud
2	365004	Gasket, vinyl foam tape
3	380630	Screen
4	380631	Fan shroud
5	510228	Motor bracket
6	510231	7 in. fan blade
7	600060	Fan motor
8	380239	Bullet terminal 51372
9	510233	Foam tape ring
10	690111	Range exhaust hood assembly
11	380240	Vent linkage assembly
12	510232	Fan motor switch
13	201070	Knob, exhaust hood
14	100043	Flange
15	690088	Trim ring assembly
	100043	Aluminum extrusion
	101489	Vinyl clad insert
16	690083	Filter assembly
	600060	Filter
	101128	Anodized screen
	100016	Nosing extrusion

Filter Removal and Cleaning

1. Remove two screws which secure filter assembly to housing.
2. Lower filter.
3. Clean filter by soaking in soapy water and rinse with hose. Air dry.
4. Reverse procedure for installation.

Micro Switch Removal and Replacement

1. Remove filter.
2. Disconnect (quick-disconnect) connectors from micro switch.
3. Remove screws which secure switch to brackets.
4. Remove switch.
5. After reinstalling switch, adjust leaf of switch to "close" when shutter is near fully opened position.
6. Reverse procedure for installation.

Fan Removal and Replacement

1. Remove filter.
2. Disconnect cable and open shutter.
3. From outside trailer, remove screws securing fan to mounting bracket.
4. From inside trailer, lower fan assembly, disconnect wires.
5. Reverse procedure for installation.

Range Exhaust Hood Assembly Removal and Replacement

1. Remove filter and disconnect flexible cable.
2. Remove screws securing housing to underside of roof locker.
3. Lower vent assembly.
4. Disconnect (quick-disconnect) connectors at harness.
5. Reverse procedure for installation

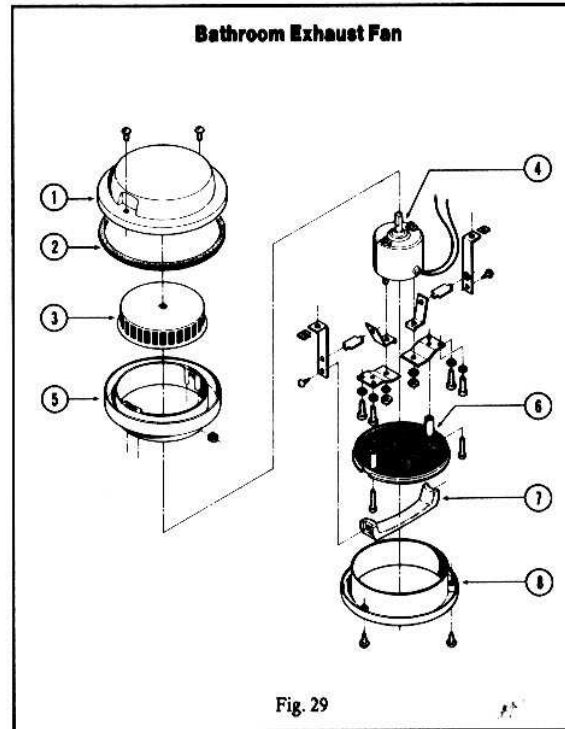


Fig. 29

No.	Part No.	Description
1	A-350-1B	Cover assembly (includes gaskets)
2	A-PH-5-C	Gasket assembly
3	A-GA-500-108-1	Blower wheel assembly
4	A-40000-475	Motor assembly
	A-40000-900	Motor assembly (Model CB-358-BCSA)
5	A-350-2B	Ring body assembly
6	A-350-3B	Grille assembly
7	A-350-10B	Handle assembly
8	A-350-4B	Trim ring assembly

Bathroom Exhaust Fan Removal and Replacement

1. Working from the outside top of trailer, remove the screws holding the stainless steel fan protective cap, and remove the cap.
2. Remove the 6 screws securing the fan flange to the outer skin of the trailer.
3. Pull the fan out to the extent of the wiring harness and unplug the harness.
4. Remove the fan assembly.
5. To install, reverse the removal procedures.

Vacuum Cleaner Assembly

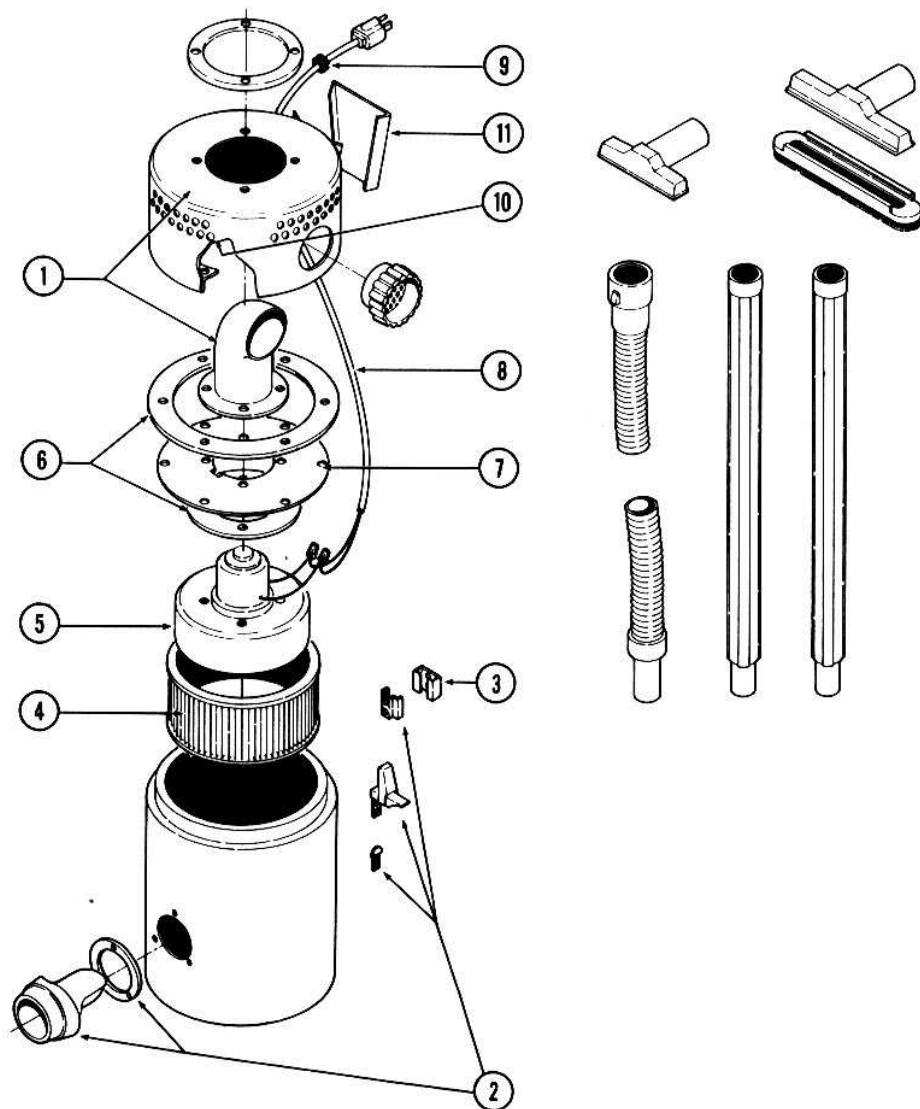


Fig. 30

No.	Part No.	Description
	690104	Vacuum cleaner assembly
1	002-58/96	Head assembly
2	002-59/96	Tank assembly
3	832-03	Wall clip
4	915-01	Filler
5	2M263	Motor
6	002-60/96	Gasket repair kit
7	832-08	Motor mounting plate
8	04-011-99	Power cord
9	34-009-99	Strain relief bushing
10	010-02	Switch assembly
11	916-00	Wall bracket

MISCELLANEOUS PARTS

6X-077	Hose assembly
5X-874	Nozzle
1R227	Motor brush

Vacuum Cleaner Operation

The vacuum cleaner dust canister is located in the center of the rear trunk (exterior access only) on both Rear Bath and Center Bath twin bed models. The dust canister on the Center Bath double bed model is located in an exterior roadside compartment behind the forward nightstand.

To remove the canister for cleaning, release the two latches near the top of the canister and lift out. You will see a filter on the air inlet to the vacuum motor, this should be checked and cleaned, if necessary each time you empty the dust canister (about every three months under normal use).

The vacuum outlet is below the center of the rear bathroom cabinet on the Rear Bath model and in a like location in the rear nightstand (between the beds) on the Center Bath twin bed model. The outlet for the Center Bath double bed model is located in the forward roadside nightstand next to the bed.

The vacuum cleaner switch is located under the end liner just roadside of the rear window on all rear bath models, adjacent to the rear nightstand on the center bath twin bed model, and next to the forward nightstand on the center bath double bed models.

Digital Clock Trouble Shooting

1. DISPLAYS DO NOT APPEAR

POSSIBLE CAUSE	REMEDY
Low or no power	Check trailer and clock leads for power
Dirty switches	Turn clock switch on and off 10-20 times to clean contacts.

2. DISPLAYS ERRATIC OR SKIP WHEN SETTING

POSSIBLE CAUSE	REMEDY
Dirty switches	Press switch back and forth to clean contacts

3. DISPLAYS CONTINUALLY COUNTING EVEN WHEN SWITCH IS NOT DEPRESSED

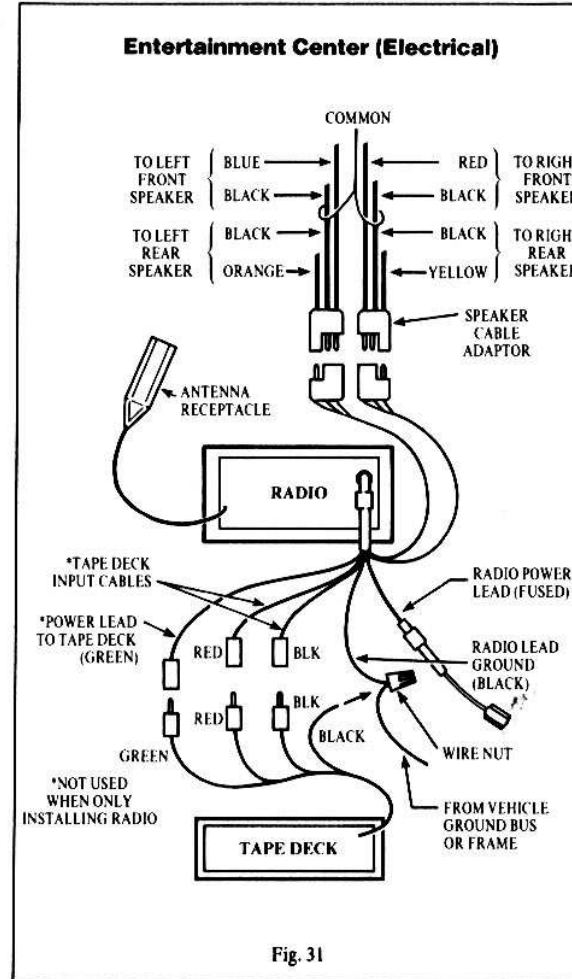
POSSIBLE CAUSE	REMEDY
Switch stuck externally	Check to make sure faceplate is not rubbing on switch
Switch stuck internally	Press switch back and forth

4. CLOCK DOES NOT KEEP TIME WHEN DISPLAY IS TURNED OFF

POSSIBLE CAUSE	REMEDY
Low or no power	See A-1. Have batteries been disconnected at any time without other power available? Any split second loss of power will void previous time set and correct time must be re-set.

5. DISPLAYS NOT BRIGHT

POSSIBLE CAUSE	REMEDY
Low power	Check battery level. Check for loose connections.



AM/FM Radio and Stereo Tape Player Removal and Replacement

1. Remove the silver colored bezel from the front of the control face on the component to be removed. This bezel snaps into position, and is removed by carefully pulling back on it.
2. Remove the four screws which attach the control plate flange to the plastic face plate.
3. Pull the component out to expose wires. Disconnect wires at (quick-disconnect) connectors. (see Fig. 31)
4. To install, reverse removal procedure.

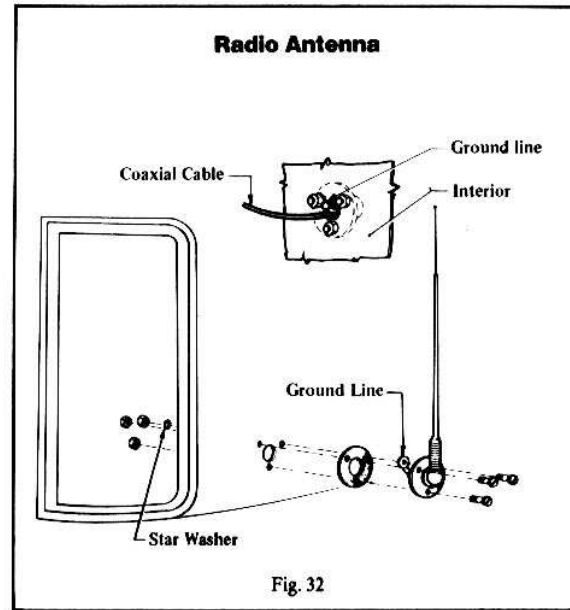
Radio Antenna Installation

1. Location of antenna should be made on road side 5" from edge of window frame and 5" up from bottom of window. (See Fig. No. 32.)
2. Use metal backing plate of antenna base as a template to mark mounting holes onto panel. Be sure to look at antenna mounting base for proper alignment.
3. Slide drape from location on inside and using a No. 30 drill, center drill bit in the 1" mounting hole and drill through both exterior and interior shell.
4. Using this as a center location, cut a 4" square hole in interior skin only. Use metal snips.
5. Through exterior shell, drill center hole with a 1" hole saw. Using a No. 11 drill bit, drill the (3) mounting screw holes.
6. Place the (3) mounting bolts in antenna base. Install rubber gasket and fit into mounting holes.
7. Hold in position while a second person installs the metal backing plate washers and nuts through the 4" square hole. A star washer should be used to insure proper grounding.
8. Remove the (2) mounting screws from the Central Control Panel and pull out from end liner.
9. Fish radio antenna lead-in wire from 4" square cut-out area to the Central Control Panel area. The "A" hole can be cut for lead-in to enter into front roof locker mounting area.
10. Attach lead-in wire to antenna.
11. Using a 5" square piece of inside vinyl metal, place over inside 4" square cut-out area and attach in place with a rivet in each corner.
12. Return drape to its original position.

NOTE: When repairs are needed for a factory installed unit, it will be necessary to cut the 4" square hole as in Step "d", to gain access to the lead-in wire.

Radio Antenna Trimming

Tune in AM dial to 1400 h_z where maximum noise level should be obtained. Then antenna is properly adjusted.



Radio Antenna

No.	Part No.	Description
1	500076	Radio antenna w/lead

12 Volt Optional Component Wire Locations

31' Excella Center Bath - Twin

Distance from Station "0"	Height from Floor	Optional Component
127	33	Microwave oven cabinet light
246	51	Floodlight
206	48	Floodlight switch
242	*	Light monitor - Stop/Turn
242	*	Light monitor - Tail
245	46½	Motorized TV antenna
33	52	A/C control
168	44	TV jack (flip-up shelf) R.S.
-16CL	27	TV Jack (credenza) R.S.

31' Excella Rear Bath - Twin

Distance from Station "0"	Height from Floor	Optional Component
127	33	Microwave oven cabinet light
246	51	Floodlight
206	48	Floodlight switch
242	*	Light monitor - Stop/Turn
242	*	Light monitor - Tail
245	46½	Motorized TV antenna
100	55	A/C control
168	44	TV jack

31' Excella Center Bath - Double

Distance from Station "0"	Height from Floor	Optional Component
127	33	Microwave oven cabinet light
246	51	Floodlight
206	48	Floodlight switch
242	*	Light monitor - Stop/Turn
242	*	Light monitor - Tail
245	46½	Motorized TV antenna
48	55	A/C control
25	56	TV jack
168	44	TV jack

31' Excella Rear Bath - Double

Distance from Station "0"	Height from Floor	Optional Component
127	33	Microwave oven cabinet light
246	51	Floodlight
206	48	Floodlight switch
242	*	Light monitor - Stop/Turn
242	*	Light monitor - Tail
245	46½	Motorized TV antenna
100	55	A/C control
168	44	TV jack
56	38	TV jack

Super Power Jack Assembly

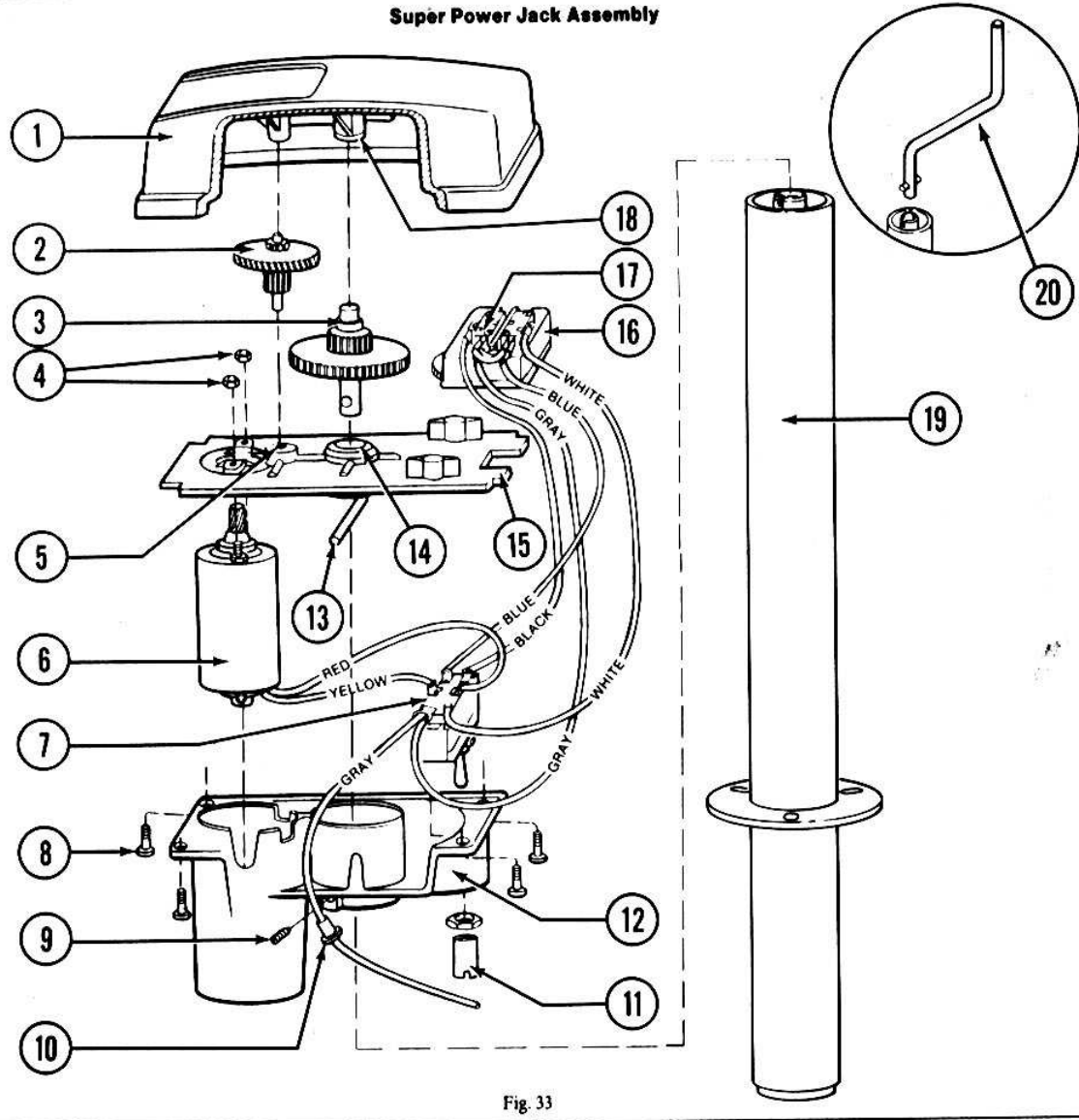


Fig. 33

Super Power Jack (Model 12250)

No.	Part No.	Description
	400457	Super power jack
	12251	Power head (less jack post)
1	12198	Cover
2	10051	2nd/3rd Gear assembly
3	11675	Drive gear assembly
4	80186	Lock nut, No. 10-24
5	80501	Bushing No. 3, 3/16"ID x 5/16" OD x 1/4"
6	12063	Motor assembly
7	81704	Toggle switch
8	81033	Screw No. 8 x 1/2", type 23, P.H. Phillips
9	81107	Set screw 1/4" - 20 x 5/16"
10	80504	Strain relief bushing
11	10069	Metal switch cover
12	12199	Motor and switch housing
13	80425	Groove type pin
14	80520	Bushing 7/16"ID x 5/8"OD x 5/8"
15	12200	Plate centering
16	12252	Limit switch assembly
17	81703	Micro switch
18	10055	Bushing No. 2, 5/16"ID x 7/16"OD x 3/8"
19	11631	Mechanical ball jack post (less power head)
20	10068	Emergency handle
	80600	Hex wrench (not shown)
21	400471	Power jack stand (not shown)

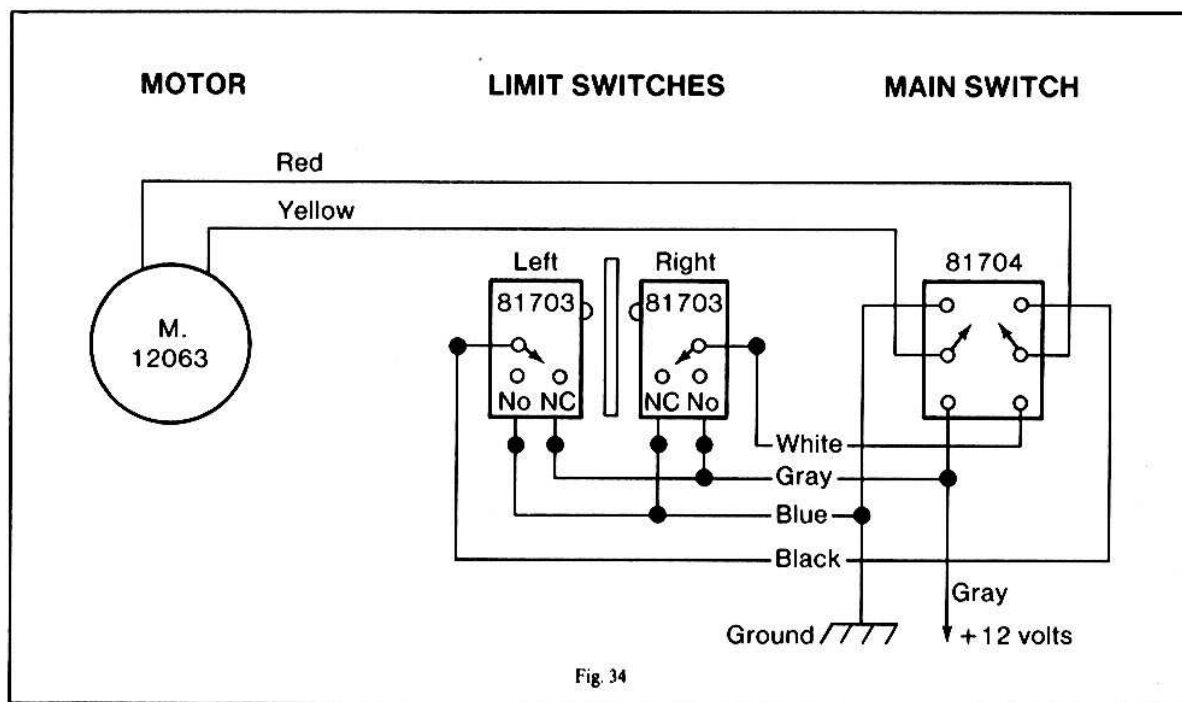


Fig. 34

Installation

1. Raise trailer front end and use blocks for support.
2. The Super Jack requires a good electrical contact with the trailer. Scrape off paint where jack post flange contacts the trailer "A" frame. Tighten the three flange bolts securely.
3. Connect lead wire to 12 volt positive fused supply (20 amp minimum). Good electrical contact is essential and soldered joint is recommended for maximum efficiency. Tape join well.

Operation

1. Remove switch cover (10069). The switch is spring return with center "off" position.
2. Familiarize yourself with the direction of travel of the jack post and the corresponding switch direction. When the post is fully extended or fully retracted, internal limit switches (81703) automatically shut off the motor.

3. Should an electrical failure occur, remove the power head by loosening the two allen set screws (81107). The jack post may now be operated manually by inserting the emergency handle (10068) into coupling on top of the post.

Replacing Power Head

It is essential that the following procedure is used before power head is replaced on the post.

1. With 12 volts connected, ground the power head to trailer "A" frame. Operate main switch in the "post retracting direction" until the motor stops automatically.
2. Using emergency handle, crank post clockwise by hand until fully retracted then turn crank one turn counter clockwise.
3. Replace head on post and make sure that drive pin (80425) is engaged with post coupler. Tighten allen set screws (81107).

Maintenance

1. Once a year remove power head and apply a high melting point grease to the post coupler. Do not pour oil into top of the post - this can cause brake failure and the warranty will be void. Always carry out the synchronize procedure when replacing the power head.
2. Every two years remove screws (81033) and cover (12198) and check grease condition. Use a HMP grease similar to Lubriplate 630AA and spread on gear teeth. Grease is not required on the nylon timing gears. No internal lubrication of the post is required, but an occasional external application of a silicone or WD40 spray lubricant on the inner tube of the post when extended is permissible.
3. Before replacing the cover, ensure that the plate (12200) and limit switch unit (12252) are located correctly.
4. Apply a little sealing compound around the mating surface of the gear cover and replace screws (81033) tightening them diagonally. Check synchronization if head has been removed from the post.
5. A little penetrating oil on the allen set screws (81107) occasionally, will help prevent corrosion and difficult removal.

Notes

Leave tow vehicle transmission in neutral when lifting both units. Dolly wheels are not recommended. Always retract stabilizing jacks before using your Super Jack under load.

Auto-Skyliner II Motorized T.V. Antenna

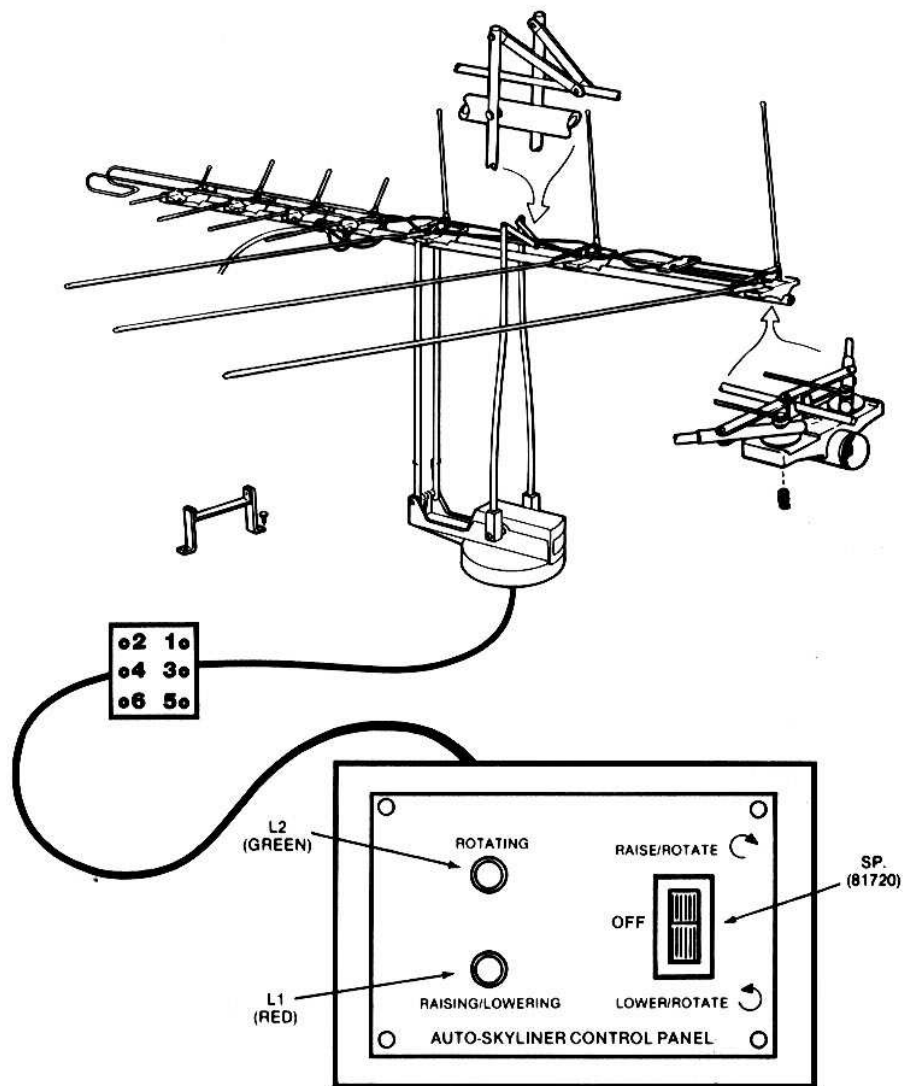


Fig. 35

No. Part No. Description

1 510375 Antenna, T.V. motorized

Auto-Skyliner II Motorized T.V. Antenna

This antenna is an advanced electrically operated version of the well known hand operated Skyliner.

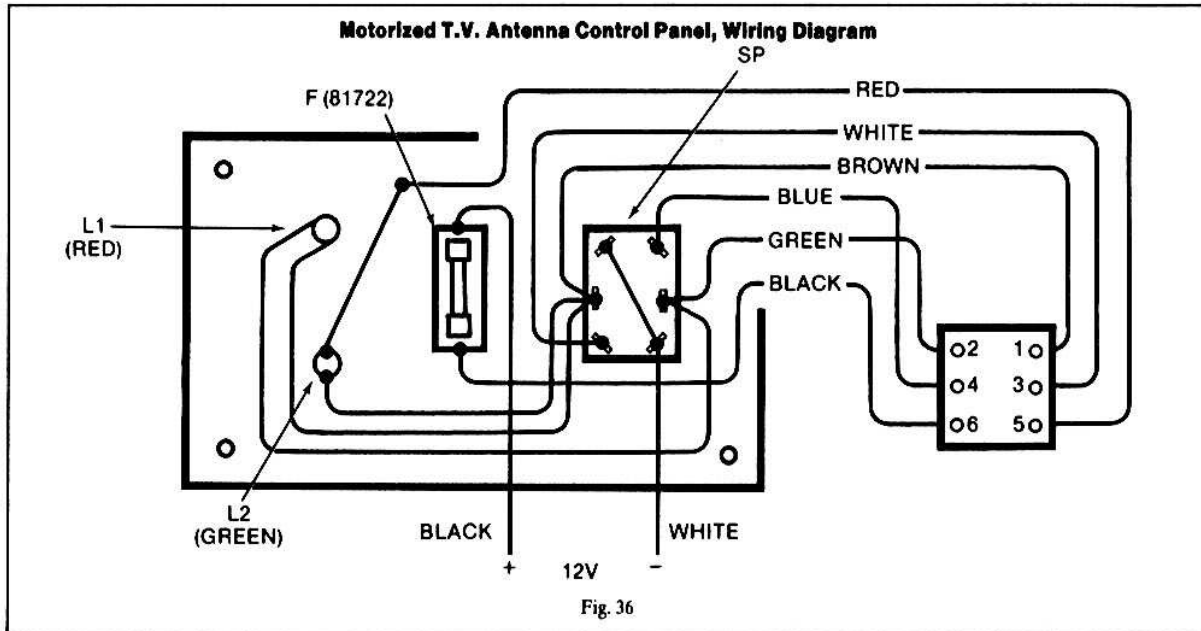
A single 12 volt motor raises, turns and lowers the antenna as selected on a remote control panel.

The control panel (Fig.35) located on the interior wall of your trailer contains a "center off" rocker switch (81720), Red lens assy. (81725) and green lens assy. (81724). Located on the rear of the panel are the two lamps (81723), wire harness (12531) with 6 pin connector (81719) for connection to the control cable (12533). Also provided is a black wire for 12 volt positive and a white wire for 12 volt negative/ground connections.

The base unit assembly (Fig.37 and Fig.38) contains a "fixed base" (10799) rivetted to a rectangular base plate (10824) and a "rotate base" (10800) which carries the four legs supporting the antenna head.

The fixed base is shown in Fig.37, less the rectangular base plate, to reveal the motor (12530) with suppressor chokes (10501), rotate limit switch (S3) and 6 pin connector (81719) for connection to the control cable.

The rotate base is shown in Fig.38 without the weather cover (10823) to show the "raised indicator switch" (S1) and "lower limit switch" (S2). The motor drive gear and delrin bevel gear (12466) are also visible.



Antenna Operation

With the control panel switch (SP)(Fig.35) in the center position, the unit is OFF.

Moving the switch to the UP (RAISE) position applies 12 volts to the motor and red lamp L1 via switch S3. When the antenna is fully raised, switch S1 will close applying 12 volts to the green lamp L2. At the same time the bevel gear (12466) is stopped mechanically to prevent further raising motion. The motor will continue to run, both lamps will be on and the unit will turn until the turn limit switch S3 opens thus shutting off the motor and both lamps.

Note that during the turning operation the switch (SP) may be operated UP or DOWN alternately to turn or return the antenna for best TV reception. The unit may be shut off at any time by placing the switch in the center OFF position.

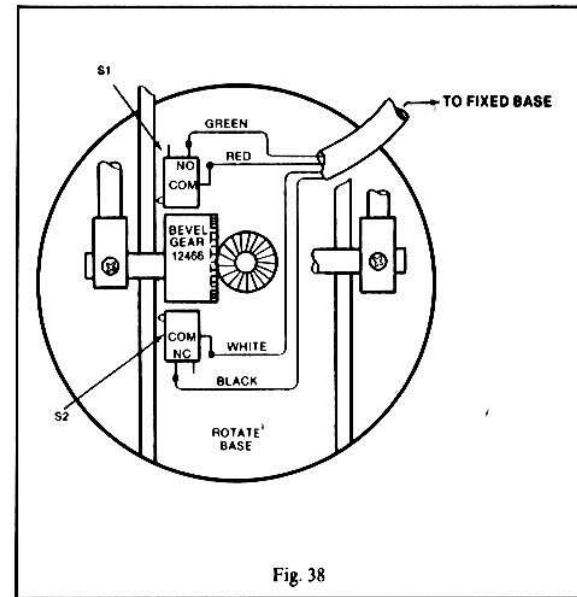
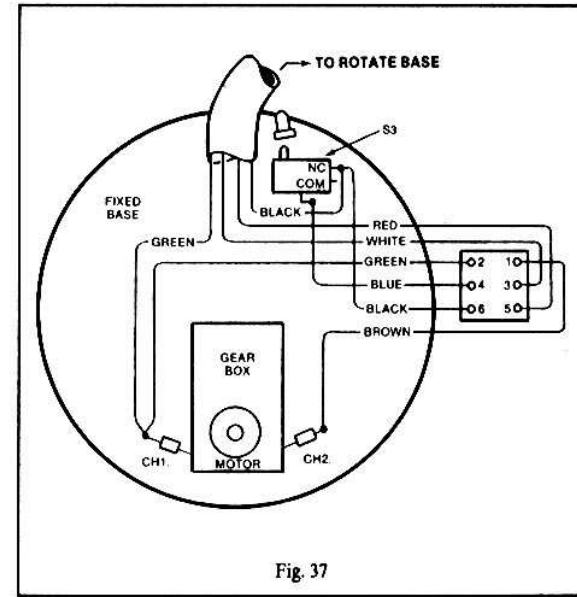
Moving switch (SP) to the DOWN (LOWER) position applies reverse 12 volts to the motor and to the lamps via switches S1 and S2. The antenna will return to the point at which the turn operation started and then begin to lower automatically. At this point switch S1 will open causing lamp L2 to go out. Lowering will continue until lower limit switch S2 opens. When this point is reached the circuit will be broken and the motor and lamp L1 will shut off.

The antenna will now be resting on the travel support (12593) and ready for travel.

Caution:

During installation and use of the Skyliner Antenna, make sure legs or head cannot accidentally come into contact with any power line.

Contact with power lines could result in serious injury or death.



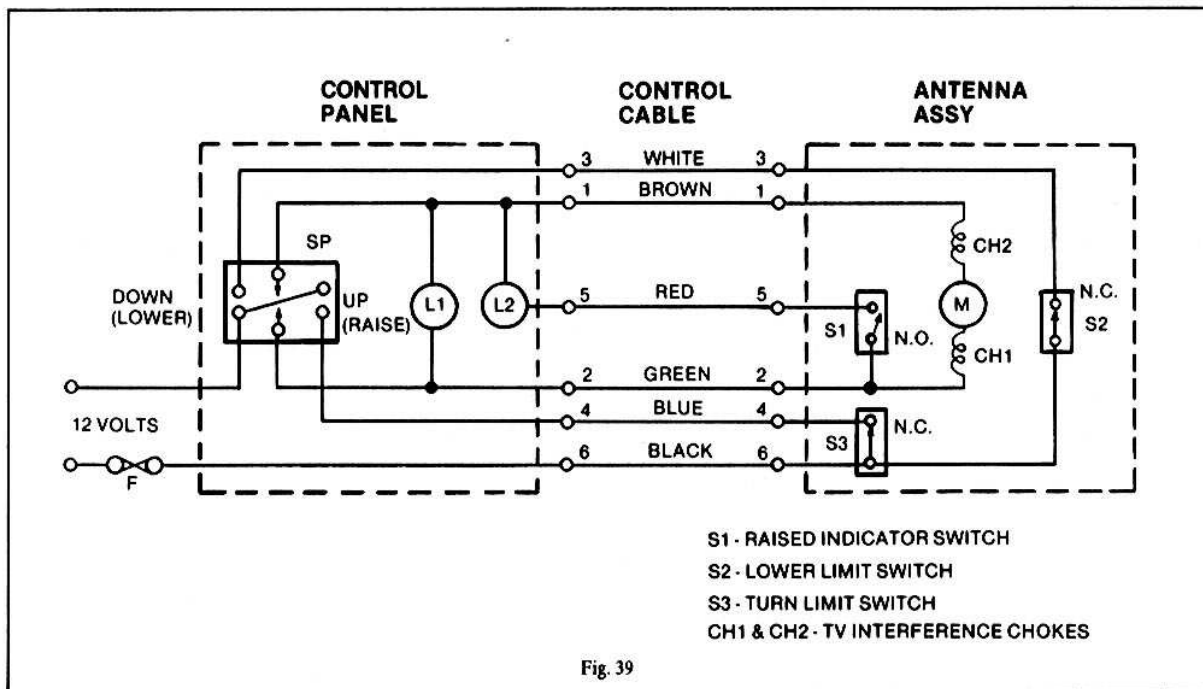
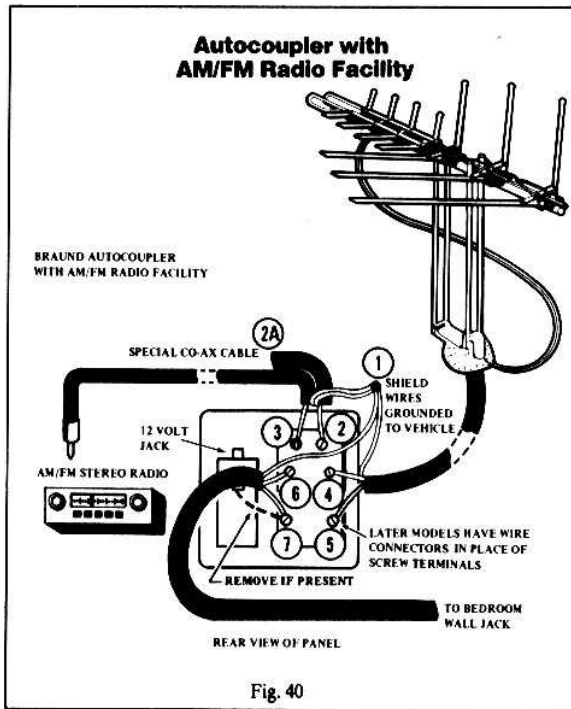


Fig. 39

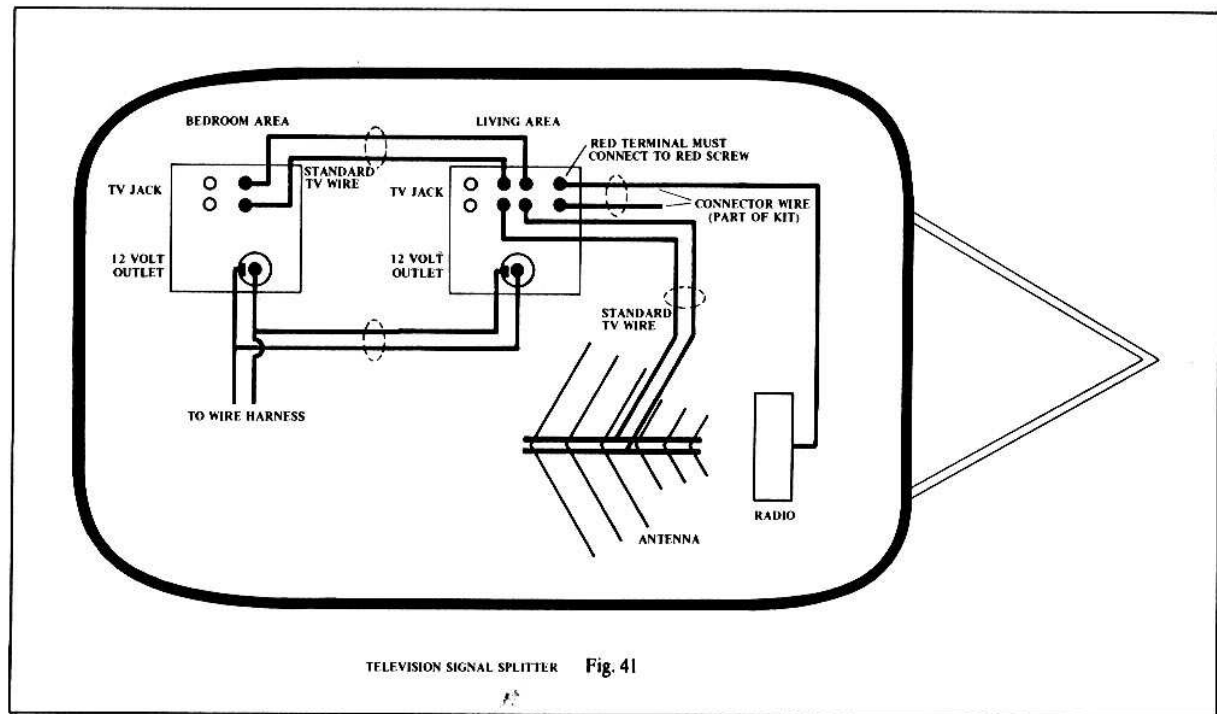


Autocoupler

When a TV antenna is used to supply signals to more than one TV wall jack, it is necessary to provide a "coupler" which will isolate one jack from the other. Without the coupler there can be almost complete loss of signals on certain channels at the first wall jack.

The Autocoupler panel provides this coupler system, and in addition, AM and FM signals received by the TV antenna are separated and delivered to the AM and FM stereo receiver via a special cable (Fig. 40). When receiving AM, the antenna should be raised, but it need not be rotated. On FM, however, the antenna is directional (as for TV), and should be rotated for the best FM reception.

A TV set may be used at the same time as FM stereo radio without mutual interference, but AM reception with a TV set operating at the same time is not recommended due to interference produced by the TV set on the AM band. There may be some converter interference on AM when weak AM stations are being received with the vehicle plugged into the 115 volt 60 cycle supply.



Step By Step Test Information

Fig. 41 shows a correctly wired Autocoupler System, including the special AM/FM Radio cable and connections.

The majority of the problems concerning poor radio and/or TV reception are due to incorrect wiring.

AM radio interference is usually due to poor or non-existent grounding of the shielded cable ground wires at point (1). To locate a problem, first check out the wiring and then carry out the following tests:

- (1) Check that all three ground wires are terminated at terminal (1). This terminal should be riveted to the inside trailer panelling close to the autocoupler. Before riveting the plastic coating on the trailer, panelling must be scraped off to the metal and a non-paint rivet must be used.
- (2) Disconnect wire at terminal (2). Use a continuity meter or buzzer and test between the co-ax wire and ground. There should be no meter reading or buzzer.

COMPLAINT	CHECK FOLLOWING ITEMS(S)
Interference on AM radio when hooked up to 115v. A.C.	Read step (1) Ground wires (3 in No.) Should be well grounded to metal.
No AM radio reception, FM OK.	Read step (2) AM/FM special co-ax.
No AM or FM radio reception.	Read step (2a) AM/FM special co-ax.
Poor TV reception.	Read steps (3, 4 and 5) Lead wires.
Furnace blower interference on TV picture.	Read step (6) Interference suppressor.

If there is, then a short circuit exists and it is probably at the end of the short length co-ax (stub) at point (2A). Check this by pulling the short cable from the wall and make sure that the inner wire of the co-ax is not touching the outer braid. Repair and replace.

(2a) Disconnect wire at terminal (3) and carry out test on co-ax wire as described above. If a short circuit is found on this cable - it will most likely be at the radio end inside the jack plug. Examine for wire touching side of jack plug.

(3) Disconnect wires at terminals (3) & (4). Use a continuity meter or buzzer and test between the lead wires. The meter or buzzer should indicate a short circuit because there is continuity through the antenna if the wires are correctly attached to the wing nut terminals on the antenna.

NOTE: If there is an open circuit, check the connections at the antenna. If after these checks there is still an open circuit, then proceed with steps 4, 5 & 6.

(4) Disconnect wires at terminals (6) & (7) and use meter or buzzer to test continuity between the wires. There should be an open circuit. If a closed circuit is indicated, remove the wall jack and check the connections. If OK, then the lead wires from the antenna are probably interchanged thus causing poor or no TV reception. Proceed as follows:

(5) With wires disconnected from terminals (4), (5), (6), & (7), repeat the continuity tests with the meter or buzzer to determine which of the lead wires is the antenna pair (short circuit) then connect this pair to the blue wires on the autocoiler panel. The other pair (from the wall jack - Open circuit) connect to the yellow wires on the autocoiler panel.

(6) If the lead shown dotted in sketch is present, it should be removed with a pair of wire cutters.

120 Volt Distribution System

The 120 volt electrical system provides power to operate the air conditioner Univolt Converter and 120 volt receptacles for portable appliance. The power is carried through the 120 volt city power flexible cord to the 120 volt distribution panel and then is distributed to each appliance or receptacle.

All wire, components and wiring methods conform to federal, state and Canadian requirements.

United States and Canadian requirements vary in type of components, approved listing agencies and wiring methods. Therefore, there are special trailers manufactured for Canadian sales. Fig. 42 illustrates the proper wiring for 120 volt distribution panels for U.S. trailers and Fig. 43 illustrates panels for Canadian trailers. Fig. 48 through Fig. 50 and Fig. 51 and Fig. 52 illustrate 120 volt wire routing for trailers built for United States and Canada respectively.

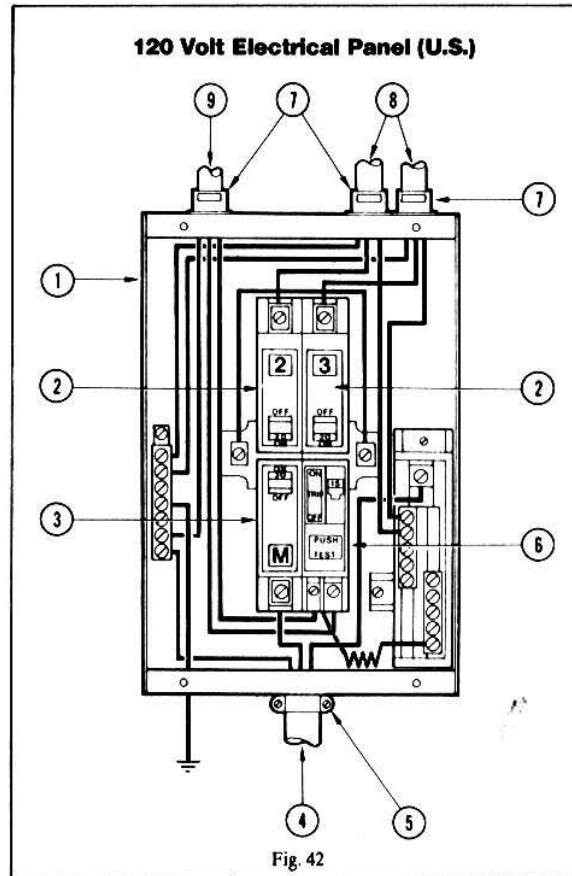


Fig. 42

No.	Part No.	Description
1	510189	Breaker box G.E. TL 410 ST
2	500019	Breaker TQL 1120 20 amp
3	510190	Breaker TQL 1130 30 amp main
4	500003	Power supply cord
5	500013	Clamp Romex 3/4"
6	510094	Ground fault breaker THQL 1115 GF 15 amp
7	500064	Romex clamp T&B 3300
8	500040	Romex
9	510147	Romex

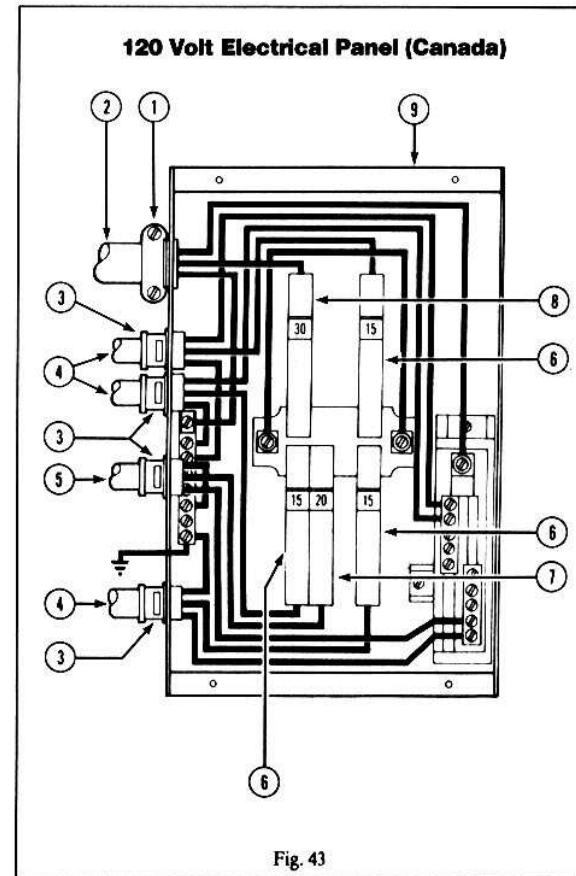
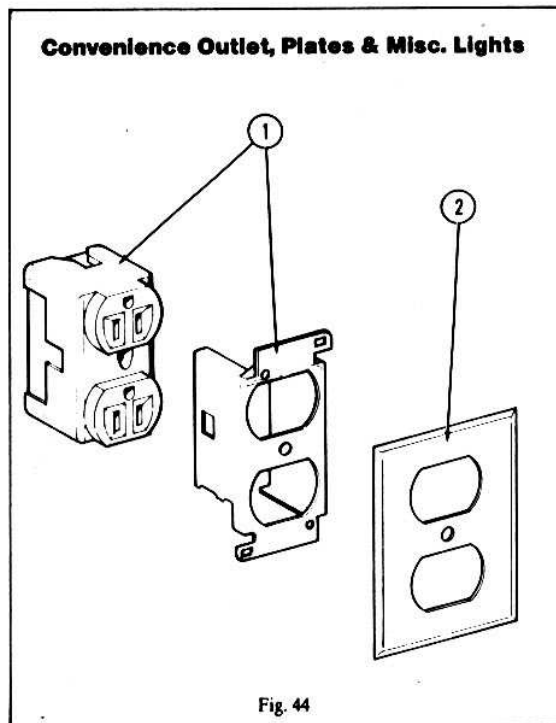
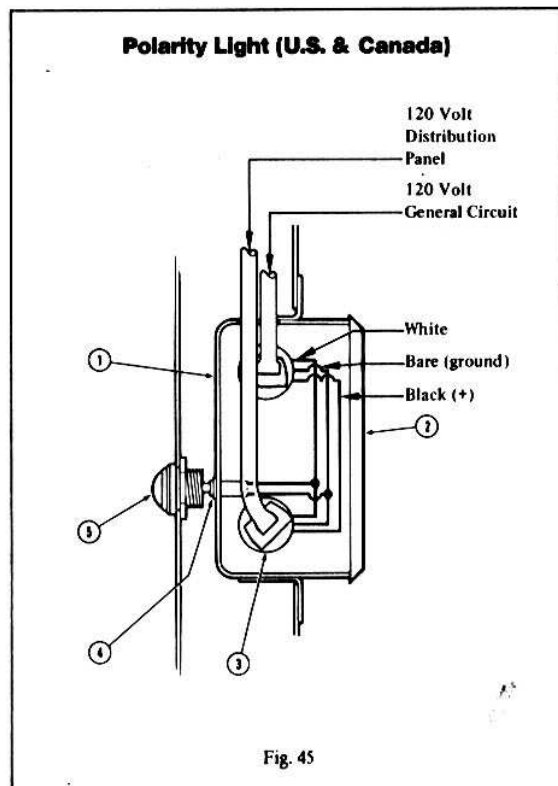


Fig. 43

No.	Part No.	Description
1	500013	Clamp romex 3/4"
2	510002	Power supply cord romex N.M.D. 7
3	500064	Romex clamp T&B 3300
4	510004	Romex N.M.D. 7
5	510003	Romex N.M.D. 7
6	500183	Breaker THQP 115 15 amp
7	500182	Breaker THQP 120 20 amp
8	500181	Breaker THQP 130 30 amp main
9	510189	Breaker box G.E. T.L. 410 S.T.



No.	Part No.	Description
1	500116	Receptacle, duplex - ivory
2	500026	Cover, 120V (inside)
Items not shown		
	500018	Rocker switch - ivory S.P.S.T.
	500430	Rocker switch - ivory S.P.S.T. "Galley Light"
	500431	Rocker switch - ivory S.P.S.T. "Step Light"
	500432	Rocker switch - ivory S.P.S.T. "Flood Light"
	500434	Rocker switch - ivory S.P.S.T. "Exhaust Fan"
	500435	Rocker switch - ivory D.P.D.T. "Bath Light"
	510025	T.V. 12 volt outlet assembly
	510137	Swivel light - living room
	510132	Access door light with bracket
	500116	Receptacle, 20 amp. (Micro wave oven)
	500116	Receptacle, single outlet (refrigerator and Univolt)
	500122	Cover, single outlet
	510122	Cover, outlet box (exterior)
	500169	Housing - outlet box (exterior)



No.	Part No.	Description
1	500010	Box, outlet No. 106 AB $\frac{1}{2}$ (U.S.)
	510049	Box, outlet No. 7662 (Canada)
2	500009	Cover, box, outlet, plain No. 58C1 (U.S.)
	510223	Cover, box, outlet
3	500064	Romex clamp T&B 3300
4	500011	Neon pilot light
5	50065	Clear lens cap

Polarity Light Removal and Replacement

1. On shower bath models the polarity light lens is located on the exterior of the trailer at the rear end, lower left corner.
2. On full and center bath models the polarity lens is located on the exterior of the trailer left rear side near the water heater access door.
3. The polarity light exterior lens can be removed by removing nut from the threaded portion attached to the rear of the lens. To gain access to this nut it is necessary to remove the junction box in front of it, on both Land Yacht and International models.
4. To replace the polarity light and not the above lens this same electrical junction box must be removed to gain access for removal and replacement on both Land Yacht and International models.

Trouble Shooting Polarity Light

The first step in trouble shooting a polarity light which stays on with correct polarity or will not come on with reverse polarity is to insure the following conditions have been met.

1. There is 120 volt power in the trailer.
2. The polarity of the power source is correct (there should not be a voltage difference between the common (white wire) and the ground (green wire).
3. The 120 volt romex wires are installed to the component and receptacles with the correct polarity (black wire to the copper colored terminal, white wire to the white terminal and the green wire to green screw or ground).
4. The ground is complete.
5. The polarity light is good.

If the above conditions have been met and the condition still exists, the possible causes are listed below.

1. If the light stays on, there may be a partial short between the hot wire (black) and the common wire (white) or a partial short between the hot wire (black) and the ground (green, bare or shell). A partial short is a short which does not pass enough current to trip the circuit breaker.
2. If the light will not come on with reverse polarity between the power cord's cap and power supply, the common wire (white) may be in contact with the ground (green wire, bare wire or shell). This condition exists only if trailer is not properly grounded and shell is "hot."

Ground Fault Circuit Interrupter (GFCI)

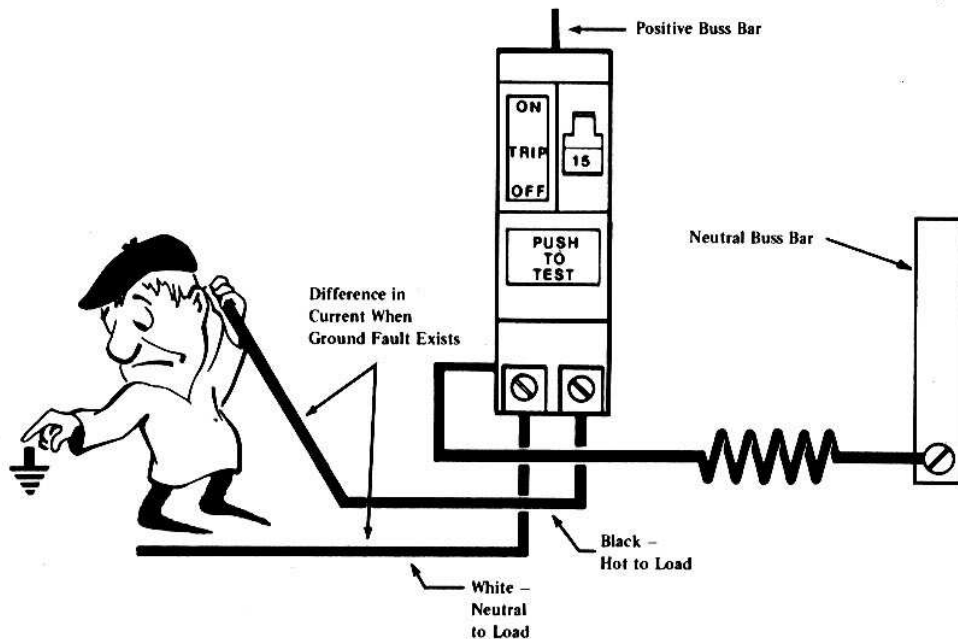
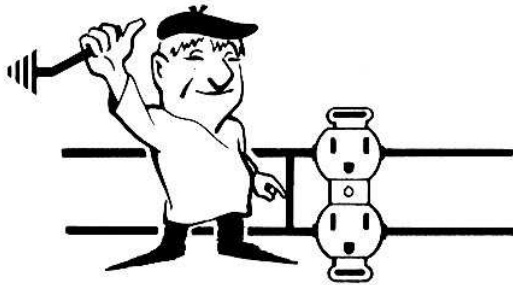


Fig. 46

Ground Fault Circuit Interrupter (GFCI)

Many states require trailers which are sold in their state and which have exterior 120 volt receptacles to have a ground fault circuit interrupter. Trailers manufactured for sale in these states have type THQL 15 amp GFCI breakers installed on the general circuit, since the exterior breaker is on this circuit. This breaker replaced the standard TQL-15 amp breaker.

When properly installed, the GFCI Circuit Breaker provides reliable overload and short circuit protection PLUS protection from Ground Faults that might result from contact with a "HOT" load wire and ground.

IMPORTANT NOTE - The GFCI Circuit Breaker will NOT reduce shock hazard if contact is made between a "HOT" Load Wire and a Neutral Wire or 2 "HOT" Load Wires.

Each GFCI Circuit Breaker is calibrated to trip with a ground current of 5 milliamperes or more. Since most persons can feel as little as 2 milliamperes, a distinct shock may be felt if the need for protection exists. However, the shock should be of such short duration that the effects will be reduced to less than the normally dangerous level. However, persons with acute heart problems or other conditions that can make a person particularly susceptible to electric shock, may still be seriously injured.

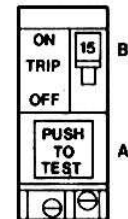
While the GFCI Circuit Breaker affords a high degree of protection, there is no substitute for the knowledge that electricity can be dangerous when carelessly handled or used without reasonable caution.

WARNING: The GFCI Circuit Breaker provides protection only to the circuit to which it is connected. It does NOT provide protection to any other circuit.

OCCUPANT: MAKE THIS TEST EACH MONTH AND RECORD THE DATE ON THE CHART

1. With handle B in "ON" position, press PUSH TO TEST button A.
2. Handle B should move to TRIP position, indicating that GFCI Breaker has opened the circuit.
3. To restore power, move handle B to "OFF" and then to "ON".

IMPORTANT - If handle B does not move to TRIP position when test button is pressed, the GFCI Breaker Protection is not complete. If this happens, replace GFCI Breaker.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976												
1977												
1978												

Locating Shorts and Opens

The key in locating shorts and opens is isolation. The first step is to isolate circuit with the short or open and then isolate the section of the circuit with the fault. Once the section is identified, the specific problem can be located. The cause may be a loose or corroded connection, cut wire, worn insulation, defective component, etc. The following paragraphs describe methods of isolating shorts and opens. There are several other approaches that may be used; however, these may be used as a guide.

Shorts

1. Isolate circuit which has short by noting circuit breaker which has tripped.
2. Disconnect power inlet cord from power source.
3. Using the 120 volt schematic as reference, disconnect outlet boxes one at a time starting at box furthest from distribution panel. After disconnecting each box check for continuity between black wire and ground or common (white) wire, on the distribution panel side of the circuit. When the continuity light or OHM meter indicates no continuity, the short is either in the receptacle just removed or the section of romex wire between this receptacle and the previous receptacle removed.
4. Examples of a short are:
 - a. The black wire of the 120 volt system contacting the white wire, bare wire or grounded surface.
 - b. An internal short in a 120 volt appliance.

The section of damaged wire must be replaced. The National Electrical Code does not permit splicing 120 volt wiring outside an outlet box or junction box. Also, the wire must not be exposed to area which may damage wire.

Opens

1. Check all receptacles and components for voltage on circuit which has open.
2. If all receptacles and components of the circuit are without power, begin to look for open in the distribution panel.
3. Inspect for loose or corroded connections and possible circuit breaker failure.
4. Check for power on both ends of circuit breaker. If there is no power on the inlet side of circuit breaker, the open is between the power cord's male connector and the distribution panel.
5. The open can be isolated by noting the outlets which do not have power. Example: If the bath outlet in the rear bath model has power, and the converter has no power, the open is between the bath outlet and converter outlet.
6. Examples of an open are:
 - a. Loose or corroded connections.
 - b. Wire disconnected from a terminal
 - c. Contacts in circuit breaker do not make contact.
 - d. Broken wire.

Typical 120 Volt Distribution System

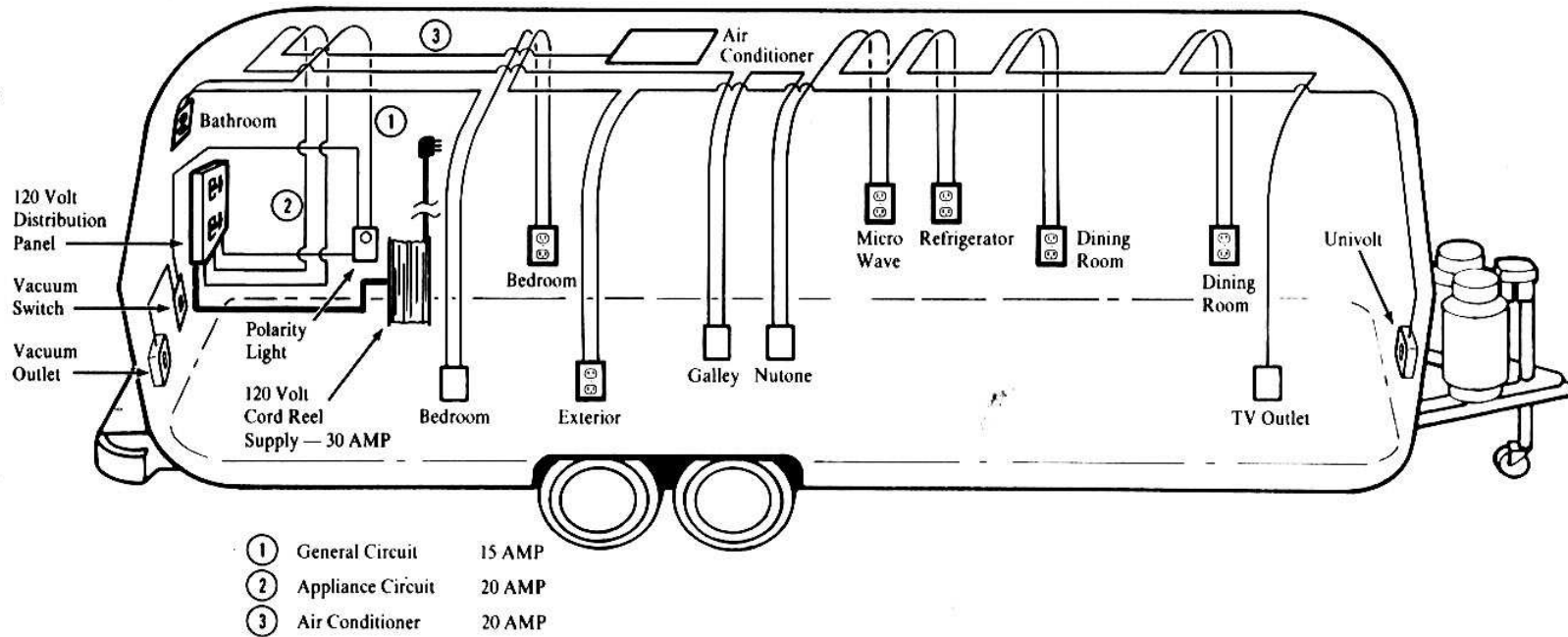


Fig. 47

120 Volt Electrical - U.S. (Twin & Double - Rear Bath)

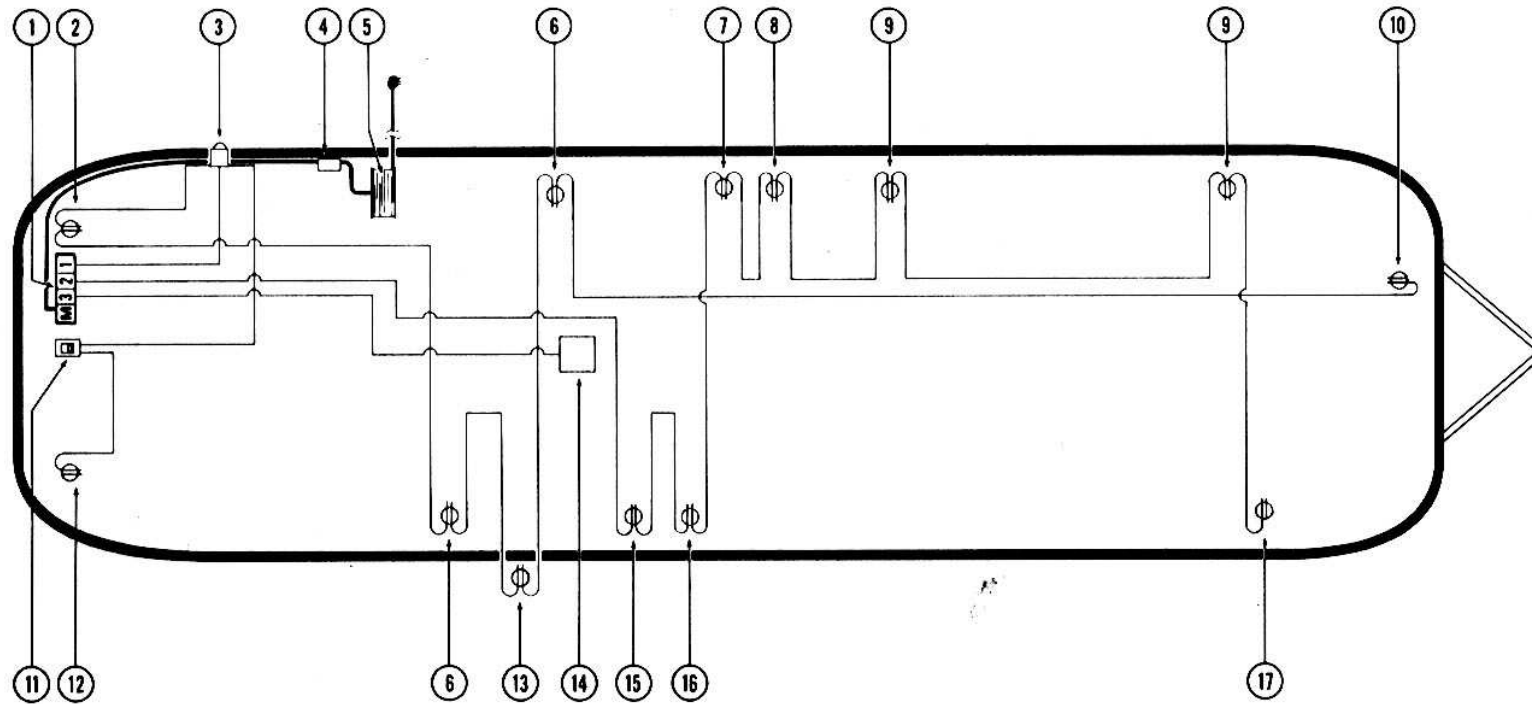


Fig. 48

No.	Description	No.	Description
1	120 volt distribution panel	11	Vacuum cleaner switch
2	Bathroom outlet	12	Vacuum cleaner outlet
3	Polarity warning light	13	Exterior outlet
4	Junction box	14	Air conditioner
5	Standard cord supply	15	Galley outlet
6	Bedroom outlet	16	Nutone
7	Micro wave oven	17	TV outlet
8	Refrigerator outlet		
9	Dining room outlet		
10	Univolt		

120 Volt Electrical - U.S. (Twin - Center Bath)

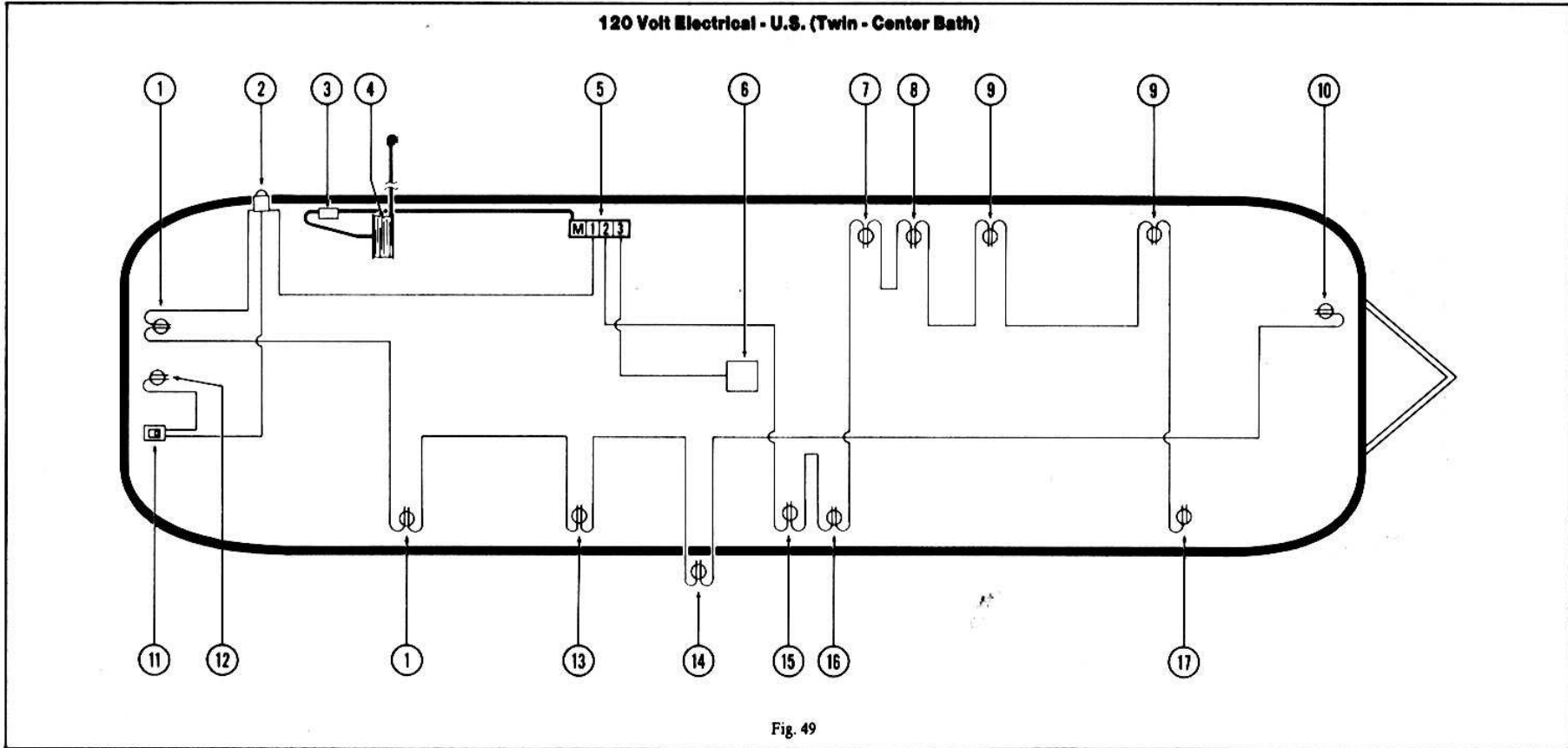


Fig. 49

No.	Description	11	Vacuum cleaner switch
1	Bedroom outlet	12	Vacuum cleaner outlet
2	Polarity warning light	13	Bathroom outlet
3	Junction box	14	Exterior outlet
4	Standard cord supply	15	Galley outlet
5	120 volt distribution panel	16	Nutone
6	Air conditioner	17	TV outlet
7	Micro wave oven		
8	Refrigerator outlet		
9	Dining room outlet		
10	Univolt		

120 Volt Electrical - U.S. (Double - Center Bath)

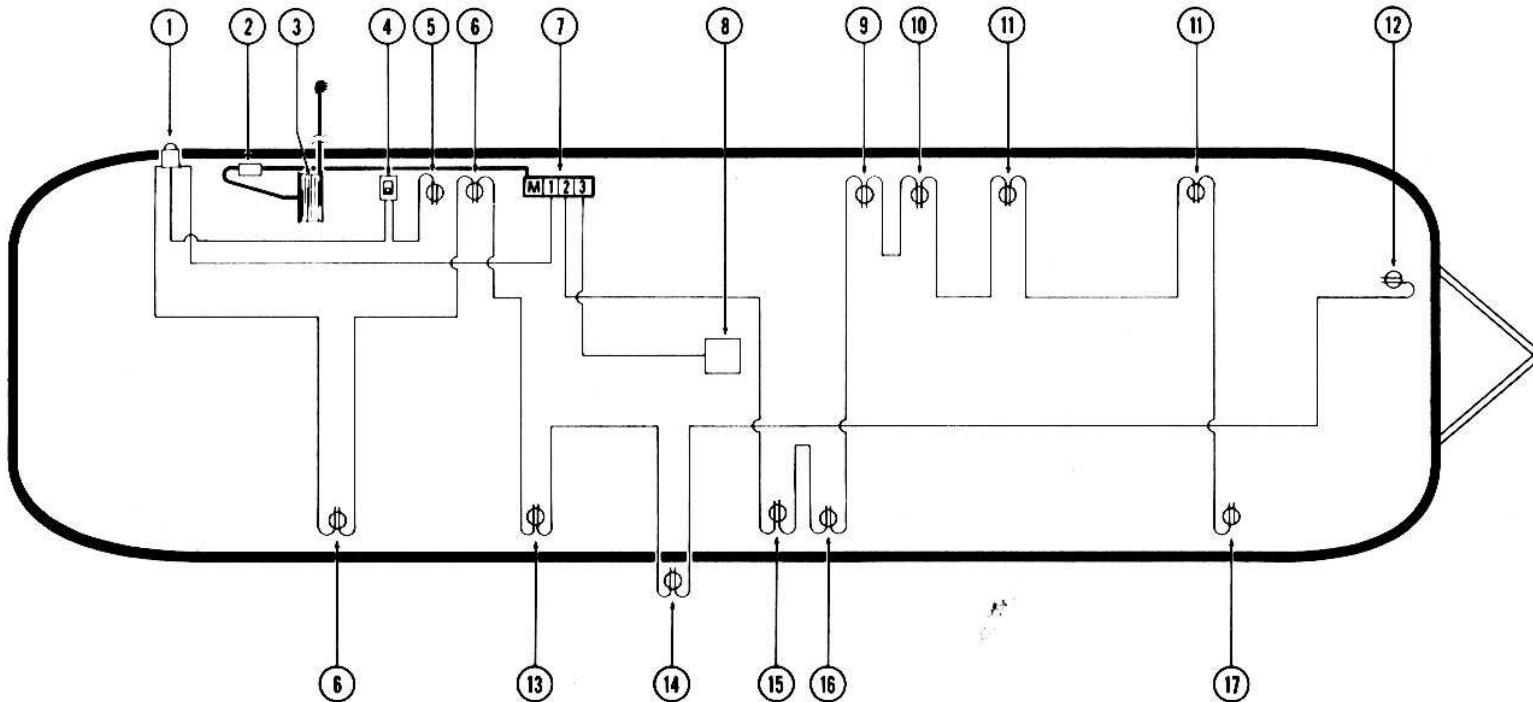


Fig. 50

No.	Description	No.	Description
1	Polarity warning light	11	Dining room outlet
2	Junction box	12	Univolt
3	Standard cord supply	13	Bathroom outlet
4	Vacuum cleaner switch	14	Exterior outlet
5	Vacuum cleaner outlet	15	Galley outlet
6	Bedroom outlet	16	Nutone
7	120 volt distribution panel	17	TV outlet
8	Air conditioner		
9	Micro wave oven		
10	Refrigerator outlet		

120 Volt Electrical - Canada (Twin & Double - Rear Bath)

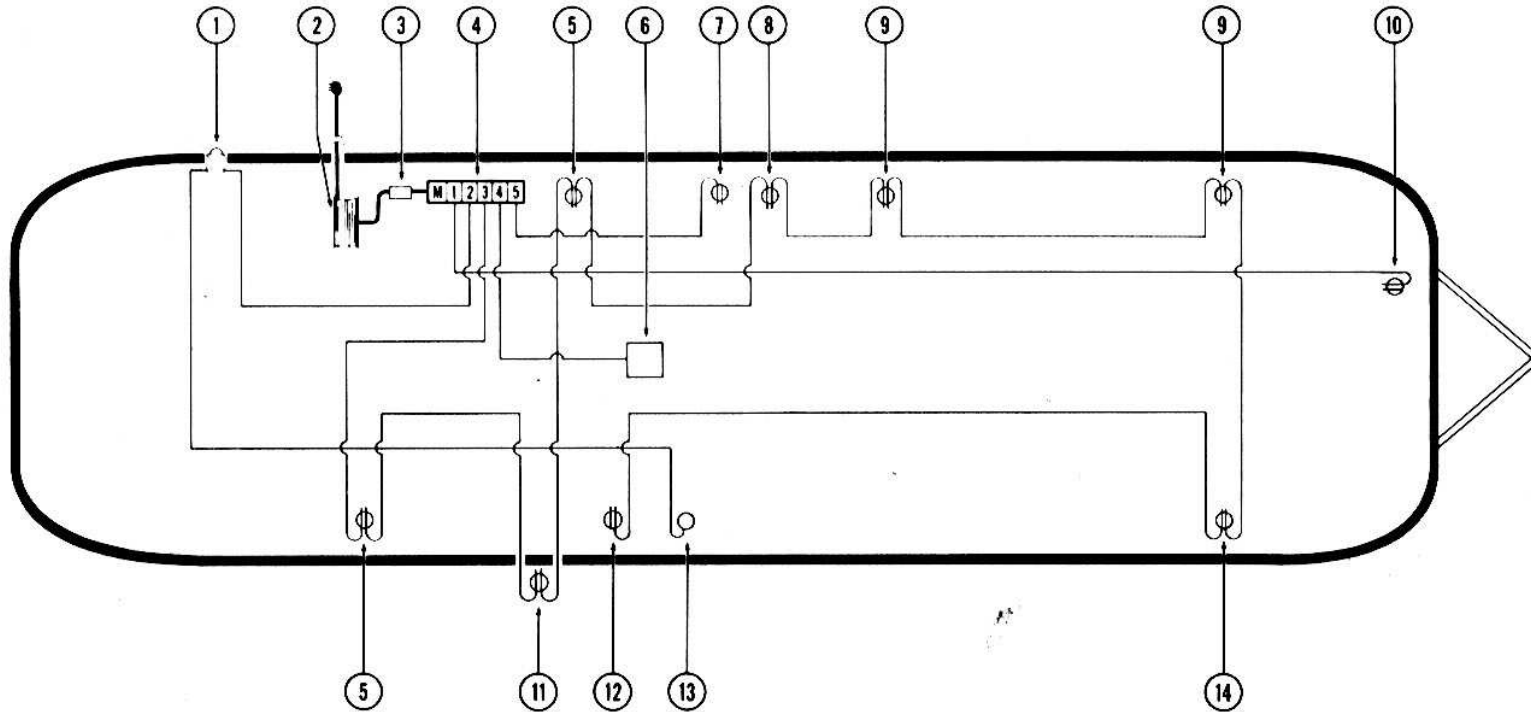


Fig. 51

No.	Description	No.	Description
1	Polarity warning light	11	Exterior outlet
2	Standard cord supply	12	Galley outlet
3	Junction box	13	Nutone (wired direct)
4	120 volt distribution panel	14	L-front lounge outlet
5	Bedroom outlet		
6	Air conditioner		
7	Micro wave oven		
8	Refrigerator outlet		
9	Dining room outlet		
10	Univolt		

120 Volt Electrical - Canada (Twin & Double - Center Bath)

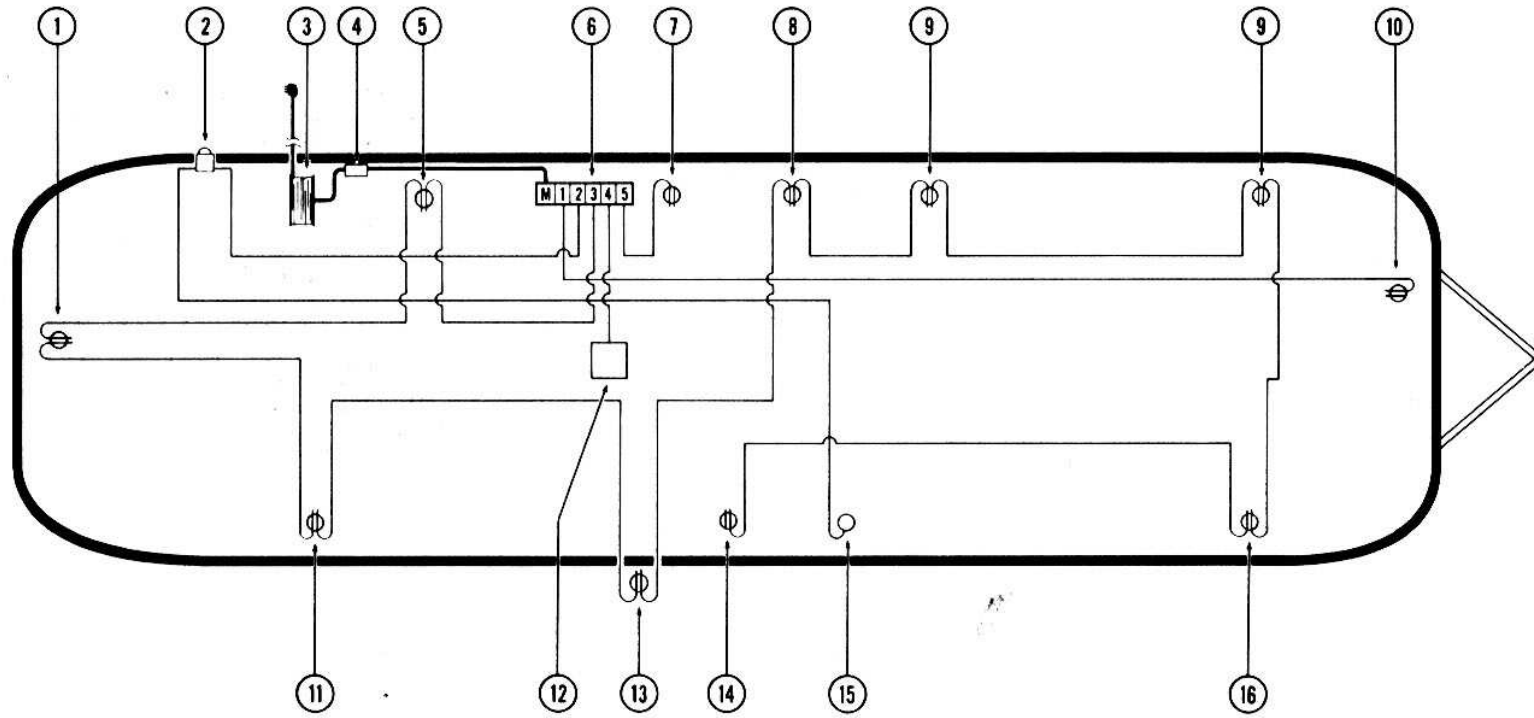


Fig. 52

No.	Description	No.	Description
1	TV outlet (Twin)	11	Bedroom outlet
2	Polarity warning light	12	Air conditioner
3	Standard cord supply	13	Exterior outlet
4	Junction box	14	Galley outlet
5	Bedroom outlet (Double)	15	Nutone (wired direct)
6	120 volt distribution panel	16	L-front lounge outlet
7	Micro wave oven		
8	Refrigerator outlet		
9	Dining room outlet		
10	Univolt		

**AIRSTREAM
ELECTRICAL CIRCUIT ELEMENTS**

Circuit 1 Purple	Circuit 2 Yellow	Circuit 3 Red	Circuit 4 Brown	Circuit 5 Blue
Bedroom Light	Ceiling Fan & Light Rear	Main Holding Tank Probe	12 Volt Outlet TV Stand	Radio Speakers
12 volt outlet Rear Bedroom	Compartment light	Aux Holding Tank Probe	Ceiling Light & Fan Center	Ceiling Light & Fan Front
12 volt outlet Bathroom	Closet Light	Furnace Control	Reading Light Curb Side	12 Volt outlet Front Credenza
Bathroom Light & Switch	Ceiling light hallway	Fresh Water tank Probe	Gally Roof Locker Light & Switch	Radio/Stereo/Tape deck
	Microwave Cabinet Light	Water Pump & Switch	Step Light & Switch	Reading Light Road side
	Bathroom Exhaust fan & Switch	Furnace		Door Bell & Button
		Range Exhaust fan		TV Antenna Control
		Solid State Panel		Flood Light & Switch
		Oven Light		Digital Clock

12 Volt Electrical - Center Bath

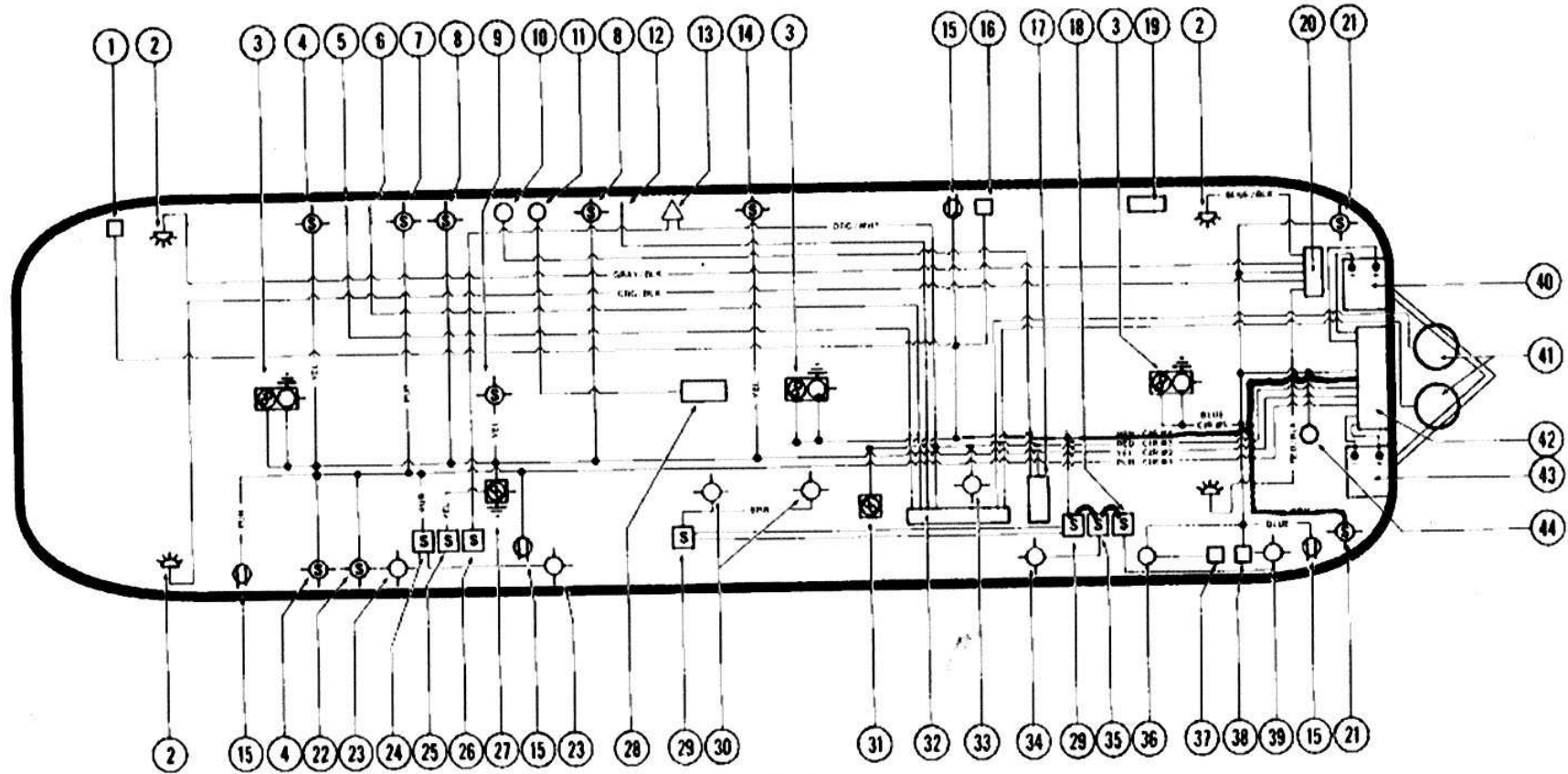


Fig 10

No.	Description	No.	Description	No.	Description
1	Telephone wire inlet	11	Air conditioner control	Ckt 1 23	Bathroom light
Ckt 5 2	Speaker	Ckt 3 12	Fresh water tank probe harness	Ckt 1 24	Bathroom light switch
Ckt 5 3	Ceiling fan & light	Ckt 3 13	Water pump	Ckt 2 25	Bathroom exhaust fan switch
Ckt 4 4	Ceiling fan & light	Ckt 2 14	Micro wave cabinet light	Ckt 3 26	Water pump switch
Ckt 2 5	Ceiling fan & light	Ckt 5 15	12 volt outlet	Ckt 2 27	Bathroom exhaust fan
Ckt 3 6	Aux. holding tank probe harness	Ckt 4 15	12 volt outlet	28	Air conditioner
Ckt 1 7	Bedroom light	Ckt 1 15	12 volt outlet	Ckt 4 29	Galley roof locker light switch
Ckt 2 8	Closet light	Ckt 1 15	12 volt outlet	Ckt 4 30	Galley roof locker light
Ckt 2 9	Ceiling light	16	Telephone jack	Ckt 3 31	Range exhaust fan
Ckt 3 10	Furnace control	Ckt 3 17	Furnace	Ckt 3 32	Solid state control panel
		Ckt 5 18	Flood light switch	Ckt 3 33	Oven light
		19	Fast stop and turn light monitor	Ckt 4 34	Step light
		Ckt 5 20	Radio/stereo/tape deck		
		Ckt 4 21	Reading light		
		Ckt 5 21	Reading light		
		Ckt 1 22	Bed light (Twin)	Ckt 4 35	Step light switch
				Ckt 5 36	Door bell button
				Ckt 5 37	Door bell
				Ckt 5 38	TV antenna control
				Ckt 5 39	Flood light
				40	Battery No. 2
				41	I.P.G. tank
				42	12 volt distribution panel
				43	Battery No. 1
				Ckt 5 44	Digital clock