Vintage CAMPER TRAILERS

4 BOOT CAMP

ELITE TRAINING

2019 - HOLLISTER, CA

VINTAGE CAMPER TRAILERS

RESCUE RESTORE RALLY

Vintage Camper Trailers Boot Camp 2019
FRIDAY AND SATURDAY SCHEDULE

	Conference Hall	Pacheco Hall	Classroom	Pavillion	Boardroom
7:00 am to 8:00 am	***Continental Breakfast Provided - Conference Hall***				
8:00 am to 10:00 am	**Wood Finishing Interiors**	**Plumbing Repair/Replace**	**Design Concepts and Project Planning**		**Get Your Stitch on, (no machine required)**
10:30 am to 12:30 pm	**Project Management, Cabinet Making**	**12 volt Electrical, Lighting and Charging**		**Aluminum Panel Replacement and Riveting**	**Sweet Dreams Pillowcases**
12:30 pm to 1:30 pm	***Lunch Provided - Conference Hall***				
1:30 pm to 3:30 pm	**Soft Metal Shaping and Fabrication 101**	**Add or Update a Bathroom**		**Exterior Paint and Prep**	**Who Says Less is More? It's all about the Accents!**
4:00 pm to 6:00 pm	**Counter Tops Optional Finishes**	**Appliance Restoration**			**Kitschy Camper Crafts**

8:30 am Sunday Morning Jim Polk of Polk and Associates will speak on valuing and appraisals of vintage trailers.
Set your clocks forward Saturday night so you aren't late! Coffee and donuts in the Conference Hall at 7:30

Airparts Inc.
SPORT AVIATION SUPPLIES

WELCOME A NEW SPONSOR

Airparts Inc www.airpartsinc.com/ is proud to participate in the 2019 Boot Camp. For 50 years we have supplied top quality aircraft and Airstream aluminum. We are the only aluminum supplier that can offer custom lengths, leaving fewer seams! Whether it's interior, exterior, or belly pan; we can help guide you!

WE WROTE THE BOOK(S) ON VINTAGE CAMPER TRAILERS

2019

The Vintage Camper Trailers Magazine is now available digitally online.

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BOOT20

THROUGH MAY 2019

American Trailerite

By Paul Lacitinola
Publisher
VCT Magazine

In 2011 we started a 12-page, newsprint newsletter for the vintage camper trailer hobby. All these years later and that little publication has grown into the Vintage Camper Trailers Magazine. This piece is a sample of the full color glossy publication that we mail to thousands of subscribers across the USA (and overseas). We are thrilled to see that the love for vintage camping is increasing in popularity with more people than ever before participating in the hobby. You do not have to be an owner, restorer or collector to enjoy the VCT magazine. Many of the rallies listed in the VCT Magazine welcome admirers and dreamers to their events as spectators to tour trailers during Open House.

Our second book, *Vintage Camper Trailer Rallies* was published in 2018. It contains the insights we have gained as rally hosts over the years. There is information on how to host a rally or just be a good guest at one. The book is full of the history of trailering and pictures of vintage trailers.

We listen to our readers and here's what's new…

Online Digital Version of the Magazine. You may be on the road full time or just prefer the magazine on your digital device. Nothing to stop you from having both. You may subscribe to either the printed or digital version on our website.

Online Classified Ads. Buying, selling or looking for vintage trailer resources? We are posting all of ours on classifieds.vintagecampertrailers.com. Magazine subscribers save 20% on any paid ads, but many of the ads are free!

Easy Online Subscription Manager. We now offer an on-line account manager for you to manage your own subscription. Pay with a credit card, give a gift subscription, change your address or renew, it's easy! (If you are already a subscriber with a PayPal recurring payment, that system has not changed.)

More "How-To" Articles. As the hosts of VCT Boot Camp it only seems appropriate that we offer some restoration tips in the magazine. Better than that, we ask professional restorers across the USA for their input and pass it on to you.

You have found your people. Vintage Camper Trailers is more than just a magazine. We promote the vintage trailering hobby by providing entertainment and education for collectors, restorers, admirers and dreamers. We revere mid-century values and reflect the era in everything we do.
We hope you will join us.

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www.VCTBootCamp.com

www.vintagecampertrailers.com
vintagecampertrailers@gmail.com

Paul and Caroline Lacitinola
American Trailerites

Vintage Camper Trailers Magazine is a non-denominational supporter of the vintage camper trailer hobby.
We welcome all collectors, restorers, admirers and dreamers.

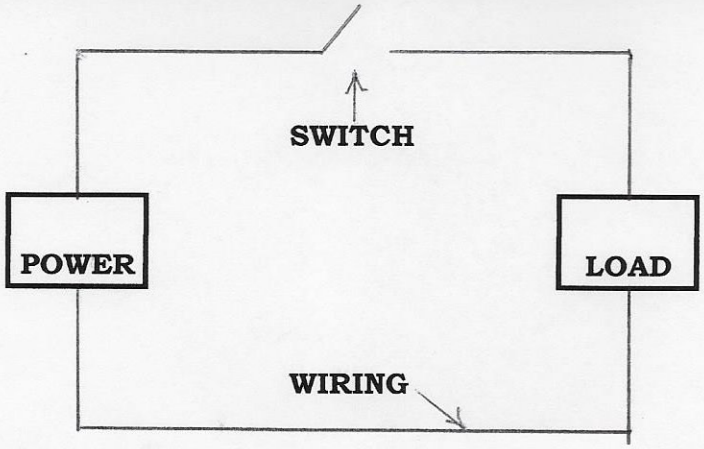
ELECTRICITY 101

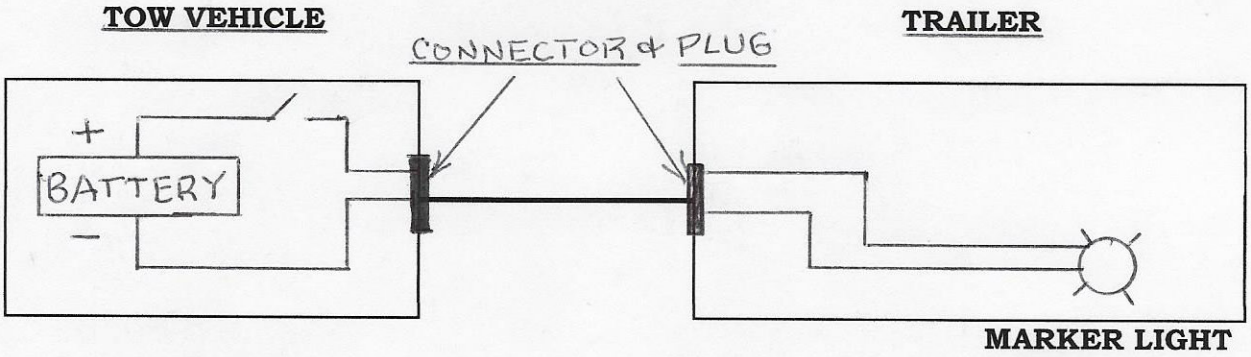
PG # 1

BASIC REQUIREMENTS FOR ANY CIRCUIT

1 - SOURCE OF POWER; BATTERY, PANEL
2 - WIRING; WIRES, CONNECTORS
3 - DEVICES; OUTLETS, SWITCHES

"ALWAYS MUST HAVE A COMPLETE CIRCUIT"





COLOR CODES

HOUSEHOLD WIRES

BLACK - HOT
WHITE - NEUTRAL
GREEN - GROUND

AUTOMOTIVE WIRES

RED - HOT
BLACK - GROUND

STANDARD OUTLET SCREW CONNECTIONS

BRONZE - HOT OR BLACK WIRE
SILVER - NEUTRAL OR WHITE WIRE
GREEN - GROUND; GREEN OR BARE COPPER

TRAILER ELECTRICITY 101 Pg #2

HOW MUCH IS TOO MUCH ?

DETERMINING YOUR LIMITS, TWO METHODS

The very first thing I suggest for you to do is to perform an energy audit. This means take a pencil and paper, and list EVERY electrical device (which would draw current) you might possibly use while camping. In fact, I would recommend for you to make two lists, the first is everything you feel that you "MUST" have and the second is what you would "LIKE TO" have. Here is a partial sample.

	AMPS	WATTS
Refrigerator	1.3	156
Air Conditioner	8.0	960
Light Bulbs (2 @ .5 amps)	1.0	120
Coffee Maker	1.0	120
Flat screen	.4	48
Radio	.2	24
Game system/ DVD	.2	24
	12.1 AMPS	1,452 WATTS

Current (I) = Power (Watts, P)/Voltage (Volts, E) I = P/E

Power (P) = Current x Voltage P = I x E

By Current: (In amps) If you know the wattage rating of an item, say 600 watts, simply divide by 120 volts. I=P/E, 600 W/ 120 V = 5 Amps

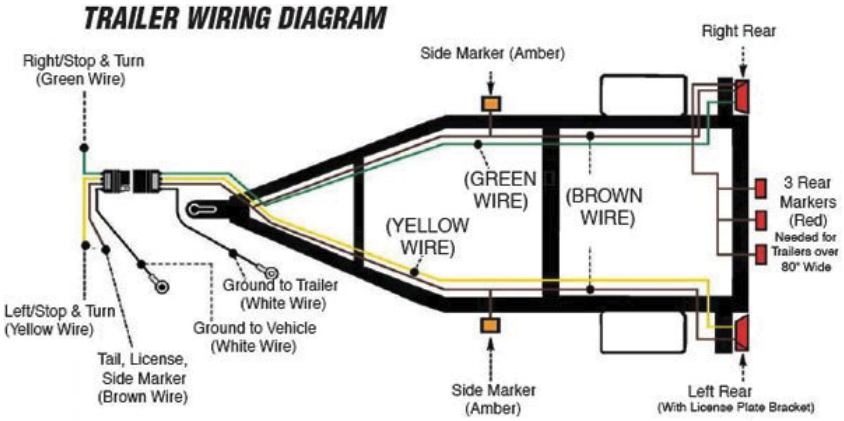
By Wattage: (In watts) If you know the current draw, say 8.5 amps, simply multiply by 120 volts. P= I x E, 8.5 A x 120 V = 1,020 Watts

If your trailer has a 15 Amp connector then you capacity in Watts is 1,800. If you decide to convert to a 30 Amp connector now your capacity is 3,600 Watts

15 Amps x 120 Volts = 1,800 Watts

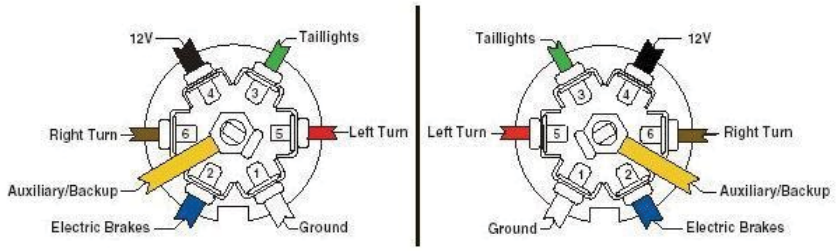
30 Amps x 120 Volts = 3,600 Watts

TRAILER WIRING DIAGRAM

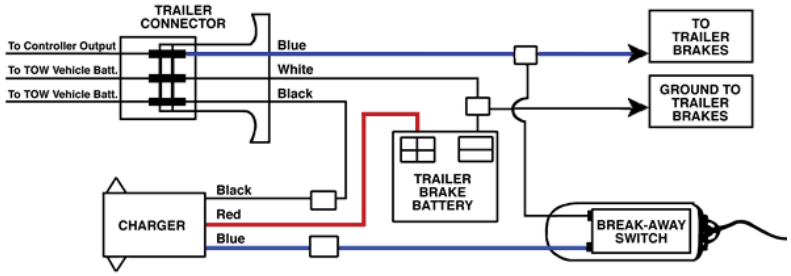


7 Way Systems

Round 2" diameter connector allows additional pin for auxiliary 12v power or backup lights.



7-way blade style (truck side) 7-way blade style (trailer side)



USING A METER

1 – Always put the Red lead in the ΩV mA plug.

2 – Always put the Black lead in the COM plug.

The only time a meter puts out power is when you are measuring resistance and then it only uses its 9 volt battery, hint you won't get shocked.

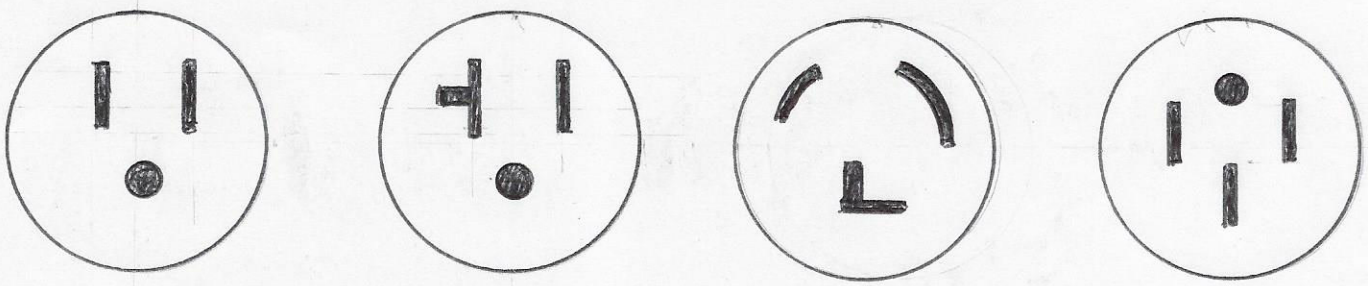
RESISTANCE Is used to see if a wire, connection or contact is good. Turn your indicator to 200 on the Ω (omega) scale, this setting gives you the most sensitivity. Now turn your power switch on, notice that when you test are not touching your meter gives a reading of 1, the number appears on the left hand portion of the display and does not have a decimal. A reading of one indicates a very high resistance or not connection. Now touch your test leads together and you will get a reading of close to zero, this indicates a good connection. This reading will appear on the right hand portion of the display and will have a decimal figure

POWER, voltage, is measured in two ways;

1 – DCV – When checking for power from a battery, like a car, truck or AA battery. Always put the red lead on the positive (+) side of the battery and the red lead on the negative (-) side of the battery. Should you have the leads reversed, no problem, you will simply get a negative (-) reading. In these examples you have your indicator turned to 20 on the DCV scale.

2 – ACV – When checking household or "shore" power. Always make sure the indicator on your meter is turned to 750 on the ACV scale. In testing AC power the position or order of the black and red leads does not matter. This is where I try to always have the meter turned to before I turn it off, this will make sure you don't drain your 9 volt battery.

TRAILER POWER CONNECTORS



15 AMP	20 AMP	30 AMP	50 AMP
120 VOLT	120 VOLT	120 VOLT	120/240 Vo

WIRE AMPACITY RATINGS

#14 Wire – 15 Amps

#12 Wire – 20 Amps

#10 Wire – 30 Amps

#8 Wire – 55 Amps

CRIMP TERMINALS/CONNECTORS

Yellow - #10 & #12 Wire

Blue – #14 & #16 Wire

Pink - #18 to #22 Wire

ELECTRICAL PARTS IDENTIFICATION

#1-Conntek 7-Way Trailer Cord & Junction Box(A)

#2-Park Power 301ELRV 30 Amp Power Inlet(A)

#3-Park Power30RPCRV Marinco Amp 125 Volt(A)

30 Foot Right Angle Cordset

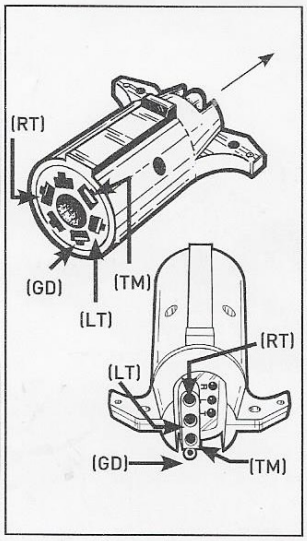
#4-ITT 16693 7-Way Trailer Conn. Circuit Tester(A)

#5-Unified Marine 50080304 Trailer 4-Way Circuit Tester(A)

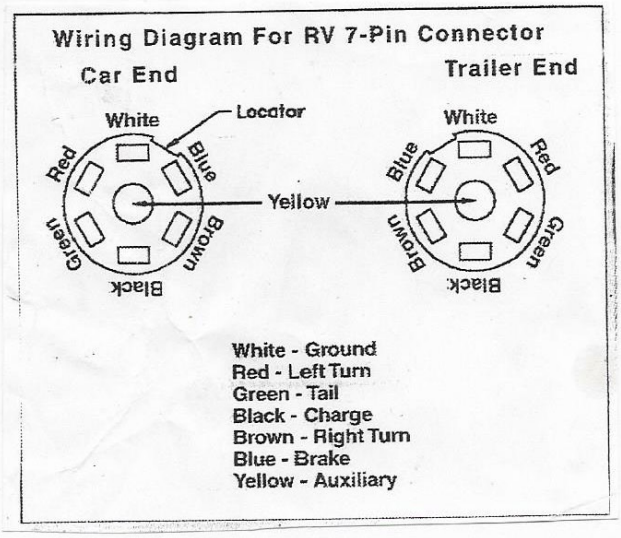
#6-Fixture Socket Pin-Type Lampholder

#0000-613-978 Home Depot

A-Amazon Item



WIRE IDENTIFICATION
GD = Ground, white wire
TM = Tail, brown wire
LT = Left Turn, yellow wire
RT = Right Turn, green wire



TIRES

USE ONLY TRAILER RATED TIRES ON YOUR TRAILER. Trailer tires (sidewalls mainly) are constructed for the rigors of towing. Running automotive tires is a bad idea that can lead to problems and possibly liability if their failure causes an accident.

Vintage Tires

Trailer tires usually don't wear out unless something is misaligned and they wear irregularly. They usually just get too old. There is a date code on the side of tires in the format WWYY (where WW = the week and YY = the year) of when the tire was manufactured. If the code does not have that format, the tire is likely over 20 years old.

Trailer tires must be replaced after 10 years from the manufacture date. This is cheap insurance for your vintage trailer. When a tire blows or separates it will usually tear up the trailer fender, belly pan and even the interior.

Pressure

Every tire has the maximum pressure on printed on the sidewall. Proper tire pressure gives you better gas mileage.

Radials or Bias Ply?

Tim Heintz says...

I personally use both types of tires with Radial Trailer Tires being used for my smaller trailers under 20' long, they seem to provide a smoother ride for light trailers although they can bounce a little depending on rough road conditions. Another down fall of Radials are the possibility of the steel belt causing damage to your trailer in the event of a tread blow out.

For my larger trailers (21'-40') and weighing upwards of 10,000+ pounds I prefer Bias Trailer Tires due to their thicker sidewalls. I find for larger trailers that bias tires provide a smoother ride, I can accelerate easier, there is less bounce (with the weight of heavy trailers), they allow for longer coasting (less surface drag on the road) and best of all it has even improved my gas mileage as much as 1 MPG when towing some of the largest trailers.

Propane Cylinders

photo courtesy www.vintagetrailersupply.com

FACTS

Propane cylinders (or tanks) on vintage trailers are commonly a #20 (5gal.), #30 (7gal.) or #40 (10 gal.) size.

Propane cylinders used on vintage trailers are considered portable by the Dept. of Transportation and are subject to DOT regulations. They must be re-qualified by a licensed propane company every 5 years.

Propane cylinders must have a modern style valve or OPD (overfill protection device) in order to be re-qualified and refilled. Should your propane cylinder have an outdated valve this can be replaced by a licensed propane company and re-qualified at that time.

Regulator:

Propane appliances require a regulator to operate properly.
The regulator is located at the cylinder. These are subject to corrosion, insects and moisture over time. **It is recommended that you replace the regulator as part of the restoration of your propane system.**

Propane Lines:

Typically propane lines on vintage trailers are made from soft copper tubing or iron pipe. Some sections may be rubber tubing. Inspect the lines for any obvious damage, cracks or wear.
Clearing the lines is recommended and should be done with compressed air. Always disconnect all appliances and the propane cylinder prior to this process. Blow compressed air into each end of the line until moisture and debris are cleared.

Propane Appliances:

Determine there are no missing parts. Look for any obvious damage and uninvited guests. i.e. rodent nests, spider webs etc. Thoroughly clean the appliance before beginning to test the unit. (VCT Boot Camp offers a class on cleaning and troubleshooting appliances.)

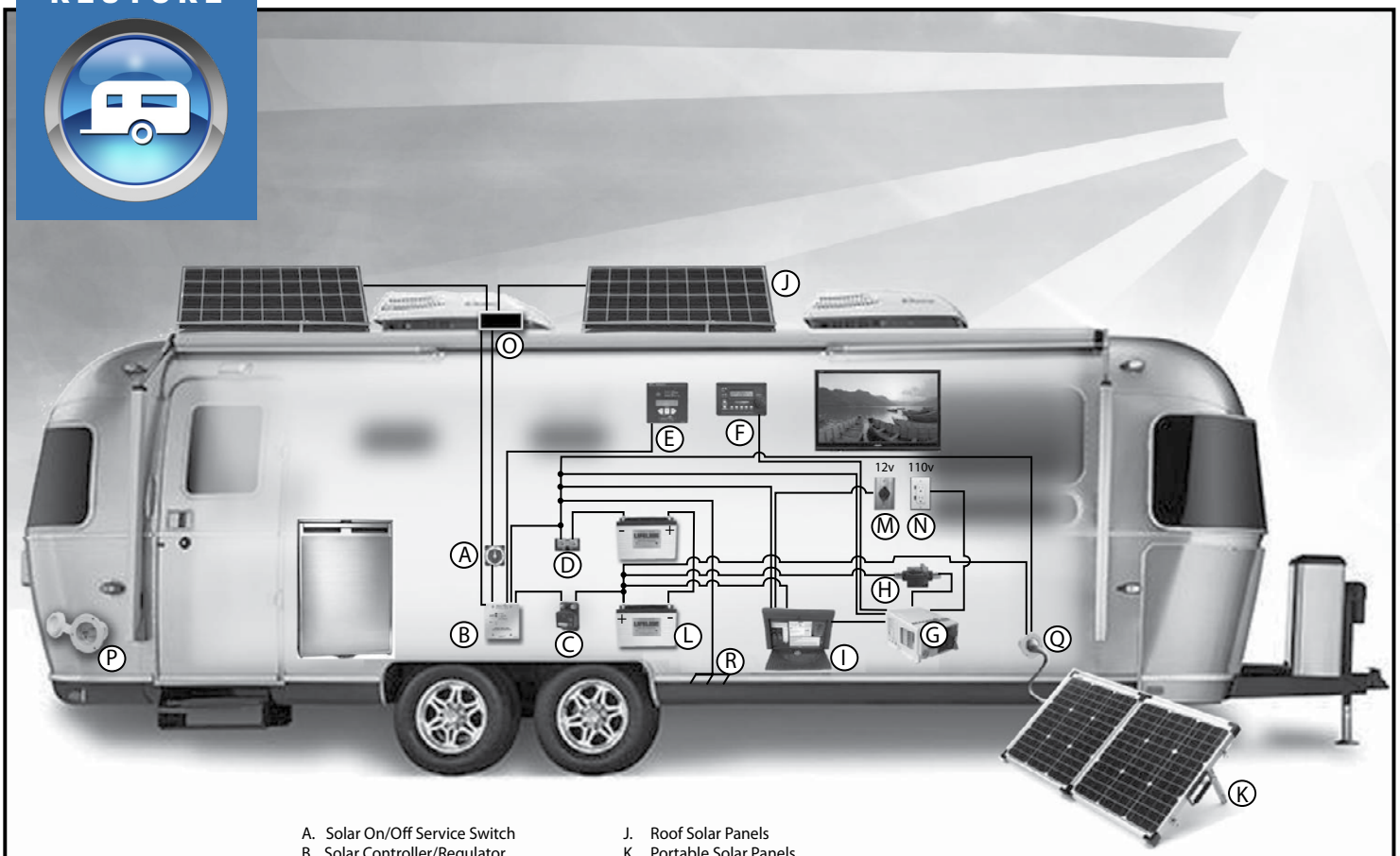
Pressure and/or Leak Testing:

This process should be done after the propane regulator, lines and/or appliances have been repaired or replaced. A manometer (low pressure gauge) is required to do a pressure test and **a spray bottle of soapy water will be needed to determine where any leaks are.**

Safety First

Using fueled appliances in your vintage trailer can increase the risk of high levels of propane gas and carbon monoxide. A detector alerts you to potentially dangerous levels of gas in your vintage trailer. Protect your family from both with one detector. **Invest in a fire extinguisher too,** just in case. Both are available at camping stores.

Consult a licensed propane professional should you have any questions or concerns regarding restoration of the propane system in your vintage trailer.



A. Solar On/Off Service Switch
B. Solar Controller/Regulator
D. Solar Circuit Breaker/Switch
C. Shunt
E. Solar & Battery Remote Monitor
F. Inverter Monitor
G. Inverter
H. High Amp T-Fuse
I. 12v DC & 110v AC Power Center
J. Roof Solar Panels
K. Portable Solar Panels
L. 12v DC Battery Bank
M. 12v DC Outlet
N. 110v AC Outlet
O. Roof Combiner Box
P. 110v AC Inlet
Q. Solar Inlet
R. Chassis Ground

AVALON RV
510 East Channel Rd.
Benicia, CA 94510
707-746-0400

RV Solar Charging System

Note:
This is a basic wire schematic for illustration purpose only.
It dose not represent every wire gauge or (+ /-) reference.

BATTERY MYTHS

Myth:	Batteries will self-discharge if stored on concrete.	FALSE
Fact:	Batteries can be stored on any type of surface and will not discharge	
Myth:	Adding a non-buffered aspirin in a battery cell will extend battery life	FALSE
Fact:	Aspirin tablets should never be added to a battery cell. Aspirin forms acetic acid which attacks the battery grid and will destroy the battery.	
Myth:	Urinating in a battery will extend battery life	FALSE
Fact:	Uric acid will attack the battery grid and destroy the battery	
Myth:	Additives, will extend battery life	FALSE
Fact:	While some additives may reduce waterloss and acid smell during charging, they will not extend battery life.	
Myth:	Use of Hydrocaps will extend battery life.	FALSE
Fact:	Hydrocaps may reduce the frequency of watering, they will not extend battery life.	

Deep Cycle Batteries

Deep Cycle Batteries: Defined as 80% discharge and then recharging as one cycle. This would be around 11.8 volts. 40% discharge and recharge is 1/2 cycle; and 20% discharge and recharge is 1/4 cycle. This type has fewer and thicker plates, versus "Starting Batteries", which have more, thinner plates for short bursts of high amperage. Starting batteries are NOT suitable for RV "house" batteries.

Most RVs come equipped not with a true deep cycle battery, but rather "RV Marine" type batteries -- a sort of hybrid between a true deep cycle and a starting battery (and less expensive for RV manufacturers to use). These are definitely better house batteries than a starting battery would be -- so use them until they wear out and then replace them with a true deep cycle type.

Battery Types: Flooded lead acid batteries are either lead calcium "maintenance free" types, or lead antimony -- the more traditional type that has caps and to which you need to add water periodically. Most deep cycle batteries are lead antimony, since the "maintenance free" types (lead calcium) are sealed, but have low tolerance for "deep" discharge (below 40-50%). Lead antimony has higher tolerance for deep discharge, but they self-discharge faster. On balance, lead antimony is better suited for RVs, and true deep cycle batteries are of this type.

Gel Cell: Good for boats, where you're in rough seas, since the electrolyte won't leak out as it would with flooded batteries. But some problems, and in terms of utility are now totally replaced by AGM. If you charge gel cells at too high a charge, you'll actually lose some of the electrolyte through gassing, and dry out the battery (shorter life).

AGM (absorbed glass mat) is a flooded lead acid battery, but instead of gel, it uses a fibrous mat which is 90% soaked in electrolyte. It is sealed, and the electrolyte is so immobilized that it can never come out.

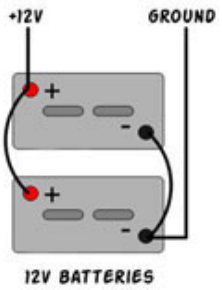
Solar is nothing but a battery charger. Inverter is nothing without a battery. So need to understand batteries before you can understand either solar or inverter.

Only true way to know state of charge of a battery is to check its specific gravity. But very few RV’rs do this. Another fairly complicated way is to buy a meter for several hundred dollars (e.g., Link 10) that will measure that for you. The other way is to go by battery voltage. Preferred method is digital display, versus analog (needle). The idiot lights (red, amber & green) that come with most new rigs actually mean very little. The key to voltage checks is getting the battery "at rest". Yet that's virtually impossible unless you completely disconnect the battery, since there are always phantom loads (sensors, etc.). If you're plugged in to shore power, or use solar panels, they "charge" and make it impossible to know true voltage. Best time is first thing in the morning when you've not been plugged in (and before any solar influence). 12.65V is "full"; 12.47V is 75%; 12.24V is 50% 12.06V is 25%; 11.89V is just about zero.

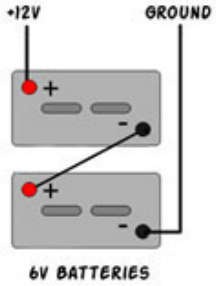
How to know battery voltage: Only way to know for sure is to test the specific gravity of each cell. But this is so cumbersome that most RV’rs want another option. The built in systems of LEDs are at best an approximation. Best time to catch battery in the needed "at rest" condition is in the early morning -- unless you have solar, in which case you need to check before first light.

Primary causes of battery failure: Overcharging is one primary culprit. To charge, you need a source 14.1V to 14.4V or more at room temperature. That's the gassing threshold for most lead acid batteries. You don't want to have higher

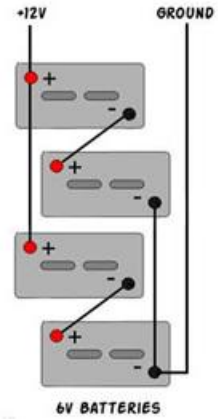
12v DC Battery Banks



Parallel



Series



Series & Parallel

Flooded Wet Cell: Typical RV Vented Deep Cycle Lead Acid Battery

150+ year old technology
Requires Regular Maintenance Adding Distilled Water
Ventilation is needed
50% of Ah available
Least Expensive

AGM: Absorbed Glass Mat

500 – 1000 Cycles
Developed for Aircraft & Military
No maintenance required
No Ventilation is needed
50% of Ah available

Lithium LifePO4:

2000 – 5000 cycles
Developed in 1980's
Minimal Maintenance
No Ventilation needed
85% of Ah available
Lighter Weight
Variety of Shapes
Less Cold Temperature Loss

A deep cycle is when you start out with a fully charged battery, use 80% of its rated capacity and then fully charge it. Depending on the type, all batteries have a certain amount of deep cycles they can withstand before they need to be replaced.

Battery Condition

State of Charge	Typical Chart Battery Voltage	Trojan Battery Voltage	Independent Battery Voltage	Specific Gravity
100%	12.6+	12.73	12.9	1.277
90%	12.5	12.62	12.84	1.258
80%	12.42	12.5	12.78	1.238
70%	12.32	12.37	12.7	1.217
60%	12.2	12.24	12.61	1.195
50%	12.06	12.1	12.51	1.172
40%	11.9	11.96	12.39	1.148
30%	11.75	11.81	12.26	1.124
20%	11.58	11.66	12.1	1.098

Wire Gauge by Amps & Length

		Total Wire Length in Feet													
	-	2'	4'	6'	8'	10'	12'	14'	16'	20'	24'	28'	33'	42'	50'
AMPERAGE	10 Amp - 120W	16ga	16ga	16ga	14ga	14ga	14ga	12ga	12ga	10ga	10ga	10ga	8ga	8ga	4ga
	15 Amp - 180W	16ga	16ga	14ga	14ga	14ga	12ga	10ga	10ga	8ga	8ga	8ga	4ga	4ga	4ga
	20 Amp - 240W	16ga	14ga	14ga	12ga	12ga	10ga	10ga	8ga	8ga	8ga	4ga	4ga	4ga	4ga
	25 Amp - 300W	14ga	14ga	12ga	10ga	10ga	10ga	8ga	8ga	4ga	4ga	4ga	4ga	4ga	1/0ga
	30 Amp - 360W	14ga	14ga	12ga	10ga	10ga	8ga	8ga	8ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga
	40 Amp - 480W	14ga	12ga	10ga	8ga	8ga	8ga	4ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga
	50 Amp - 600W	12ga	12ga	10ga	8ga	4ga	4ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga
	60 Amp - 720W	12ga	10ga	8ga	8ga	4ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga
	70 Amp - 840W	12ga	10ga	8ga	4ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga
	80 Amp - 960W	12ga	8ga	8ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga
	90 Amp - 1080W	12ga	8ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga
	100 Amp - 1200W	10ga	8ga	4ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	N/A
	120 Amp - 1440W	10ga	8ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	N/A	N/A
	140 Amp - 1680W	10ga	4ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	3/0ga	N/A	N/A
	160 Amp - 1920W	8ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	3/0ga	N/A	N/A	N/A
	180 Amp - 2160W	8ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	N/A	N/A	N/A	N/A
	200 Amp - 2400W	8ga	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	3/0ga	N/A	N/A	N/A	N/A
	250 Amp - 3000W	4ga	4ga	1/0ga	1/0ga	1/0ga	1/0ga	3/0ga	3/0ga	3/0ga	N/A	N/A	N/A	N/A	N/A

BENEFITS OF SOLAR POWER

- **FREEDOM** to explore remote, off-grid locations
- **QUIET** alternative to generators
- **SAVINGS** extends battery life up to 50% or more
- **BACK UP** power for emergencies
- **RENEWABLE** and safe power source

SAVE MONEY ON FUEL AND MAINTENANCE

No matter where you travel today, the cost of fuel is on the minds of many people. There is a genuine and growing interest in alternative or "Green" technology to replace or reduce traditional power sources. For almost three decades RV'ers have enjoyed benefits of solar energy: mobility, reliability, versatility and in recent years, affordability.

A SOLAR CHARGING SYSTEM PROVIDES AN EXCELLENT SOLUTION FOR BATTERY CHARGING WHILE KEEPING TRAVELLERS IN ALL THE COMFORTS OF HOME.

Depending on your power needs, campers can run most appliances or electronics off of a solar system, without ever having to turn on a generator or pay for shore power. Think of the money saved not only on the actual generator, but the many trips to the gas station as well as maintenance costs.

BENEFITS OF CLEAN, QUIET + AFFORDABLE MOBILE POWER

- **Once installed, solar is virtually maintenance free and will provide free, continuous power for decades.**
- **Solar power is silent and will keep a peaceful, natural setting**
- **A solar charging system can prevent 'dead' batteries and extend your dry-camping or boon-docking experience.**
- **Solar will charge and maintain your battery both on and off the road, ensuring healthy and long-battery life.**
- **A solar kit or system allows you to have plenty of 'fuel' when you need it.**
- **You can avoid running your generator and promote renewable technologies.**

12v DC Appliance Load Calculations

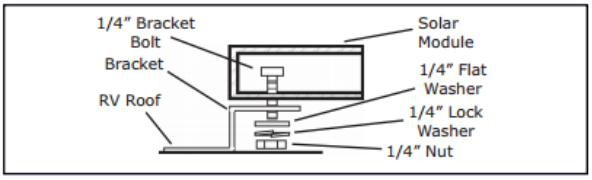
Watts	12 V DC Items	Qty		Hours/Day		Amps	Ahr
36	Ceiling Fan		x		x	3	
6	Cel Phone 12v DC Charger		x		x	0.5	
12	CO2 Alarm		x		x	1	
48	Furnace (Forced Air)		x		x	4	
6	Laptop 12v DC Charger		x		x	0.5	
10	Light, 10W		x		x	0.8	
15	Light, 15W		x		x	1.3	
3	Light, Halogen		x		x	0.3	
1	Light, LED		x		x	0.1	
3	Propane alarm		x		x	0.2	
10	Radio		x		x	0.8	
36	Range Hood Fan & Light		x		x	3	
5	Refrigerator circuit board (LP)		x		x	0.4	
36	Refrigerator, 12v		x		x	3	
10	Stereo, 12v		x		x	0.8	
72	Tongue Jack		x		x	6	
36	TV 12v		x		x	3	
27.6	Water Heater 12v		x		x	2.3	
48	Water pump, 12v		x		x	4	
						Total	

110v AC Appliances	Amps
Blender	5
Coffee Maker	8
CD Player	1
Computer	3
Crock Pot	2
Curling Iron	1
Drill	5
Electric Blanket	2
Hair Dryer	12
Iron	10
Microwave	13
Toaster	10
TV	4
VCR	1.5

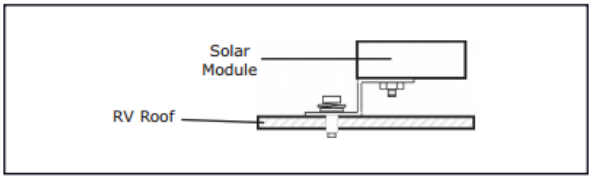
RESTORE

Basic Solar Installation

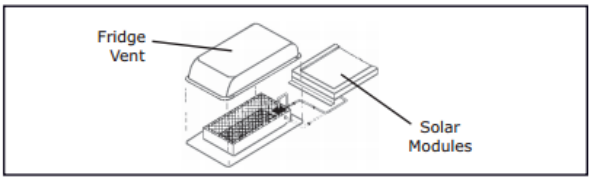
Step 1: Install the mounting brackets and cable on to the solar module.



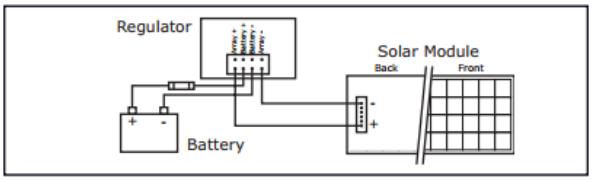
Step 2: Secure the module to the roof with the leak-proof hardware provided.

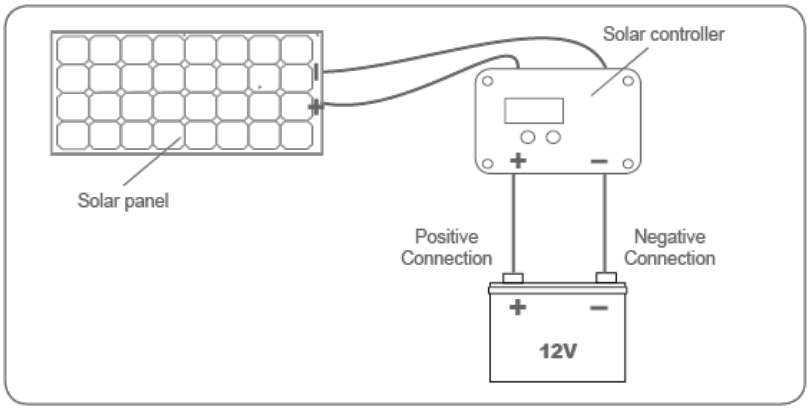


Step 3: Run the power cable down the refrigeration vent and then to the regulator.



Step 4: Attach solar module cable to the regulator; connect the regulator to the batteries.





SOLAR MYTHS

There are a few misconceptions around solar that we often come across and perhaps the most common one is around heat. There is a perception that the hotter the day the better a solar panel will work, but in reality it is the exact opposite. The hotter the day the less efficient solar cells at converting light to electricity.

The sun emits two forms of energy - heat and light. The heat or warmth we feel from the sun is called solar thermal and can be harnessed to heat water in a solar water heater for example. It is light from the sun that a solar panel needs to produce electricity, not heat. The term PV or photo voltaic simply means volts from light. So the higher the light intensity (measured in Watts/m2) the more power a solar panel will produce.

The conversion of light to electricity actually generates heat and as a solar cell warms up it gets less efficient, so a hot day will make things worse.
In fact a solar panel is rated at 25 celsius and every degree the cells go over 25 celsius the solar panel power is reduced by around .45% on average for mono and poly cells.

So on a 35 celsius day a solar panel is de-rated by about 5%. Conversely on a cold day at 15 celsius you will get 5% more power output from a panel.

Note- some solar panels are manufactured completely black for aesthetic reasons (some people think they look better), but if you think about a black body absorbs more heat from the sun and will be hotter than a white body which tends to reflect some solar radiation. So whilst you might have the 'coolest' looking solar panel it would probably perform the worst because the cells would be hotter!

Busting solar myths 2 - My 100w panel generates 100w
Unfortunately in real world this is often not the case. The rated capacity of a solar panel can only be achieved under certain atmospheric conditions, known as STC- standard test conditions. If you look on the back of a solar panel it should say the figures are based at STC, which is 25 celsius, 1000W/m2 light intensity and AM1.5, which is an air mass density figure.

In the real world a solar panel is unlikely to be at STC when we use it. Our location, temperature, cloud, angle of the sun, humidity, dust all effect the output from a solar panel at any instant. So we must take an average when sizing a solar panel and typically it's around 75% of what the panel is rated for, is what we can expect on a typical day. So from a 100W solar panel fixed to your RV roof we would expect to get around 75W of power from it on an average day.

So when we size a solar panel we have to take this into consideration else we could end up with insufficient power to run appliances. The general rule is if you have space on your RV roof, fill it with as many and as much solar power as possible, you can never have too much solar (budget permitting of course).

Wood Frame Repairs

by Tim Brown (530) 320-3604

- Inspection, disassembly

  1. Start by removing all windows. This will expose some of the softer/rotten wood areas around them. We remove them to re seal (putty tape) anyways, so this is not a wasted step.
  2. Remove all J moldings (corner moldings). Expose corner and window framing damage.
  3. Remove front and rear aluminum skins. Then proceed to removing roof vents and roof sheeting.

  This exposes all wood damage to view from the outside. It's easier to replace wood from the outside as opposed to the inside. Keep a sharpie handy and take lots of measurements of window, door and vent placement. You can write these measurements onto the exposed exterior wood. Take pictures of the panels with written measurements as you disassemble each area to replace. This becomes the blueprint for future reference. It's important that the new window and vent openings remain in the exact same place. You need the skin to line up correctly when it gets reinstalled. While on this subject, don't throw anything away at this stage. It can be really helpful to go get that rotten piece later and see how it was made. We find it easier to copy than reinvent.
  In a canned ham, do not remove all the rotted wood all at once. Take a 3 stage approach to replacing the wood framing and interior panels. First address the front end of the camper. From the floor to the first seam above the front window. Remove and replace all damaged areas. Many times it needs all new wood in this area. Second, address the rear end in the same manner. From the floor up to above the rear window. One the front and rear ends have been reassembled and are structurally solid, then the third step is to address the roof/top area from above the front window back to the rear window. The key here is that by following this 3 step approach, it helps to keep the framing of the camper square. It also breaks these operations down to prevent you from becoming overwhelmed with the whole job.

- Sub Floor

  Inspect the floor for soft spots. You need to determine how much, if any, needs to be replaced. Sometimes we get lucky and it's fine. Other times we tear up the whole floor and replace it. In some cases we will overlay the existing floor with ¼ inch underlayment and then work from there.

Wood Finishing:

Wood Types-Typically, we see lots of Birchwood installed in Vintage Campers. Other popular woods are Ash and Mahogany. Check with local hardwood suppliers (usually not home depot or Lowes) to see what they can order. They will not always stock what you need, but can order and get it fairly quickly. When doing a complete restoration, I always order 3 or 4 sheets more than needed. (Locally I use Nevada County Hardwoods in Grass Valley (530) 273-3318)

Matching Colors- Amber Shellac was a very popular finish in these old campers. Denatured Alcohol is your best friend with Shellacs. Use local Paint stores to custom mix stains. Bring in a sample of the old wood that you are trying to match, and a piece of the new materials that they can apply new stain to as they go through the matching exercise.

Sealer First, then Finish Coats- Always use a sanding sealer over your stain. Think of it like a primer for the finish. It is designed to sand easy and build up quickly. Roll, Brush or Spray. When the sealer is dry, sand it with 320 grit paper. Be careful not to "burn thru" the sealer and into the stain. Wipe the sanding dust from the walls using a tack cloth before starting to apply the finish. Finish coats come in 3 sheens. Gloss, Semi-gloss, or Satin. I prefer to use Semi-Gloss or Satin. Finish coats should be applied one coat per day. Usually 2 coats is fine. I sand with 400 grit between coats. Clean your tools every day when you are done so they stay nice enough to use again.

<u>Marmoleum Installation</u>

1.) Must be installed over plywood underlayment to not void warranty, I try to pick as clear as I can AC grade is usually great to use.

2.) Ardex Feather Finish, is the leading prep on the market. Can be mixed with water for sub floor prep or a latex rubber additive for shower walls or where flexing is an issues. The Finish is latex based, but sometimes more is needed.

3.) Start with a thick coat on seams and screw heads about 6” wide, let dry throughly and then mix your second batch of prep considerably thinner, then skim coat the whole floor over all the plywood and right over your seams.

4.) Orbital sand the entire floor to a smooth surface

5.) Vacuum all dust up around edges and then clean and vacuum the field of the floor.

6.) Now it’s time to heat and acclimate the vinyl and plywood. Close up the trailer, plastic or close all the windows and access doors. Place small heater inside the trailer.

Place Vinyl in the trailer and bring the trailer up to temperature. Hold at about 80 degrees for as long as possible. Preferably overnight so the vinyl role will lose up.

Get help for the next step…..

7.) Slowly unroll the vinyl forming a taco like roll down the center of the trailer. Keep heat on as long as you can. *This step can get a little uncomfortable because its going to get warm in the trailer.*

8.) Start at one corner using a heat gun where needed to make the floor playable. Start trimming the edges with a hook blade knife. You want to end up with an 1/8” to 1/4” gap**, at the most** of space between the edge of vinyl and the wall.

9.) Once you’ve worked your way all the way back around to your starting corner, clean up your scraps and get ready to glue.

10.) Start at the front or back and stand on the vinyl grabbing the end edge. Standing on vinyl walk backwards folding the vinyl backwards over itself, exposing the plywood floor.

The Glue Process

11.) Using a 1/8” notched trowel, Dump a small amount of glue on the plywood at the far corner so as to be able to work the glue across the plywood back towards your rolled vinyl. Put any access glue back in the glue bucket and repeat on the other side, meeting the glue line in the middle, try not to step around on the floor too much until you know its in the right place and it hasn’t shifted in any way.

12.) Carefully fold vinyl back across the freshly spread glue

13.) Use a vinyl roller or a rolled up towel and start in the middle, rubbing or rolling any air pockets out toward the edges.

14.) Once it’s all flat and stuck it’s time to trim your new floor out.

TRAILER COUPLERS

Replacing yours may become necessary

The coupler is the metal piece that actually connects your trailer to the tow vehicle. Once the coupler is permanently bolted or welded to your trailer's frame rails (the "tongue"), it fits over the round ball hitch attached to your vehicle. Latches of various types on the coupler clamp around the round ball tightly enough to prevent it from disconnecting, but they allow just the right amount of play for proper pivoting around turns.

Couplers are subject to a large amount of wear-and-tear. They move and bounce around on top of the trailer ball as you're driving. They are exposed to the elements. Eventually, the release mechanism becomes sticky, or the fit on the trailer ball becomes loose, or corrosion can compromise their functionality. Replacing your coupler may become necessary to ensure that your trailer-to-hitch connection remains as secure as possible.

Trailer tongue shape determines the type of coupler you'll need. Most trailer tongues are known as an "A-frame" where the two frame rails join together at a 50 degree angle at the front of the trailer. This is the industry standard.(top right). Some vintage trailers may have a "straight" tongue; when one single frame rail serves as an attachment point.
(center right)

A-frame couplers are designed to fit over the very front end of the trailer where frame rails join together. Since industry standards specify a 50 degree angle, there's no special concern needed when purchasing any A-frame coupler - except for personal preference when it comes to choosing a trigger latch or sliding collar release mechanisms. (bottom right). A-frame couplers are usually intended to be welded onto the trailer frame rather than bolted in place. If you don't have the ability to weld your coupler yourself a professional welder, or even a muffler shop like Marco Muffler can complete simple welding tasks like this that may arise during your restoration.

Hitch balls come in 1 7/8" and 2" and 2 5/16" sizes. 2" being the most popular on vintage camper trailers. To tow safely you must have a coupler that matches the size of your ball. Be sure your latch is functioning properly and that you always pin the latch to insure that it stays latched and keeps the trailer secure as you drive. A trailer that detaches from the trailer while you're towing is not going to make for a great weekend.

Note: The numbers on your coupler are patent and model numbers for the coupler, NOT your trailers VIN number.

Design Notes

First things to consider when choosing a trailer:

1. Where do I plan on traveling? What kind of utilities will be available to me?
2. What amenities are important to me?
3. How will I be using my trailer? This helps to choose a layout that will fit your needs.
    a. What sleeping capacity do I need?
    b. Do I need privacy?
    c. What size bed and configuration is ideal for me?
    d. How does my family live?
    e. How do we cook/eat?
4. What design style am I drawn to?
5. Do I have an inspiration piece?
6. Once you narrow down how you are going to use the trailer, length/layout, and what era stylistically you are drawn to, now you can start choosing a trailer.

Top Design Tips:

1. Try to create the “feeling” of the vintage of trailer you have chosen.
2. If you are starting from scratch, choose materials that were present at the time that your trailer was manufactured: Wood species, combinations typically found in your era of trailer. Detailing varies from the 1930’s to the 1940’s to the 1950’s. Pay attention to the details, but use restraint. Go for authenticity in textures and materials, the right feeling will follow.
3. Go to flooring materials: Forbo Marmoleum, commercial grade, eco-friendly marbleized linoleum. VCT tile, vinyl composition, original tiles were 9 x 9, if you choose to go with a hard wood, engineered hardwood is recommended.
4. Go to materials for countertops: Stainless Steel, Aluminum, Laminate surfaces, Marmoleum.
5. Upholstery fabrics: Choose fabrics that are high quality, heavily textured, commercial grade if possible (this will be used for camping!). Vinyl is recommended if you travel with pets/ children. Leather is beautiful but will require more maintenance. Add detail to the upholstery, piping, buttons, as it has a huge payoff.
6. Exterior colors/materials: Try to locate the original paint codes, always timeless. Custom color? Remember it will almost always appear darker than on the sample, and consider the era of trailer you have when choosing color. For exterior “Leatherette” Use marine grade, UV protected marine vinyl, matte with a slight texture. (Sample)
7. Choose all of your finishes together. If possible make the bold patterns/colors the pieces easily replaced like curtains & accent pillows.
8. Lighting & Hardware. When sourcing new inexpensive light fixtures, choose the most streamlined fixtures you can. Vintage? Be sure to factor in rewiring them. Quality lighting reproductions are available but expensive, as is Hardware. Rejuvenation, Restoration Hardware, Cedar & Moss. House of Antique Hardware ….. Again, nothing beats original, but it is getting harder to find.

Air Conditioning

Creative cooling for your vintage trailer.

There is more than one way to restore a vintage trailer. We turned to our readers and the pro's to find out what trailerites are using to cool their trailers. This is what we found out.

By Scott Campbell
Retroluxe Vintage Trailers

Within a few months the weather will again change from cold winter, to spring, then on to summer. Getting out to enjoy our vintage trailers again becomes the focus of most vintage trailer enthusiasts. Vintage trailering in warmer climates, and in hot summer heat poses the challenge of keeping the interior of your trailer cool. Trailers produced up until the mid 1960s were not equipped with air conditioners. Unlike newer trailers, vintage trailers were designed with retro shapes and curves that pose challenges to installing roof mounted AC units. Honestly, most vintage trailers look much better without a modern AC unit sitting on the roof. Especially true with smaller can ham trailers. Today, most RVs and trailers come with roof mounted AC units. They are energy efficient and they look right at home with current travel trailer designs. Installing air conditioning in a vintage trailer is not difficult and there are a couple ways to get it done.

Honestly, most vintage trailers look much better without a modern AC unit sitting on the roof.

First, let's consider the roof mount AC. All roof mounted AC units fit over the top of any 14" ceiling vent opening. Securing the unit to the roof is done by installing the provided bracketry and four bolts into the bottom of the AC unit through the vent opening. New AC units come with a foam water gasket seal that is sandwiched between the unit and the roof. Older AC roof seals, around five years old, tend to dry out or shrink allowing water to get in. Replacing the seal is done by removing the AC unit, the old seal and cleaning the roof skin thoroughly. Using fortiflash, line the ceiling vent. Wrap the opening with the fortiflash covering 1" of the roof skin edges, the exposed roof structure and about 1" on the ceiling so that if there is a future leak the roof structure and ceiling are protected. Next apply a bead of Trempro 635 between the roof skin and new seal. If an older ceiling vent was removed be sure to apply sealant to remaining holes and allow enough time for it to dry. Then reinstall the AC. Trailers with curved roofs may require additional support under the rear of the AC unit as roof mounted AC units are designed mostly for flat roofs. Most roof mounted units weigh around 90 lbs. This may require adding extra roof supports to handle the weight.

Roof mount A/C unit controls inside of the trailer.

Next, let's consider installing a window mounted AC unit. Window units cost hundreds less than roof mounts. Small window mount AC units draw less power and in smaller trailers have enough CFM output to adequately cool the interior. In most cases, the units can be placed in a less conspicuous location such as a closet or under a bench or bed. Putting a window mount AC in a vintage trailer window is usually unsightly, tends to leak and permanently damages the window structure. When installing a window mount AC into a trailer keep in mind that window mounts are designed to vent outside so when putting one inside a closet or under a seat there needs to be enough air space above and on both sides of the unit to allow it to cool. If an AC is placed into too small of a space it will overheat and not work. A window mounted AC also needs an unobstructed shrouded exhaust vent and the ability to drain off accumulated condensation moisture. AC exhaust can exit the trailer by installing a sealed exhaust chute with a latchable exterior door. It is always best when installing a roof or wall mount A/C to follow recommended manufacturer suggestions. Our shop, has had success with the installation of the roof mount and custom installations of the window mount AC units.

Note A/C in bottom of cabinet.

Most Roof AC units require a dedicated 20 Amp. 115V shore power circuit. On older trailers an electrical upgrade may be needed.

RESTORE

Air Conditioners

What to consider before installing one.

We asked more than on person so we could get more than one answer. Your application may present additional or different challenges. Use this series of articles as a guide before you invest in an A/C unit.

BY John Palmer
Palmer Boys Trailers

I use roof mounted Dometic RV A/C units, purchased through Vintage Trailer Supply (VTS) There's lots to consider, in installing them on a 60 to 70 year old trailer.

Structure of the roof and walls

The weight of a roof mount A/C unit is roughly "over 100#" installed, and it's going to be bouncing up and down while your traveling down a highway. I have not yet seen a vintage roof that will hold this weight without some cross beam support retrofit work. I even place extra supports inside the walls to carry the weight from the added roof rafters. Look to place the unit where you have cabinets and closet walls to help spread the weight. Personally, I would not be willing to give up a standard roof vent just to add the A/C unit. Standard roof vents are very effective at removing hot air from the trailer, and providing flow through ventilation. Your going to have to have the ceiling open anyway, so it's not any more work to custom locate the unit and properly frame out the opening. Please note, that many vintage aluminum skinned/framed trailers have suffered from aluminum corrosion and you really need to inspect the inside condition, after the ceiling panels are removed.

If you're rebuilding a medium, to large sized vintage trailer, the additional expense for A/C is minimal to the overall cost. On higher-end trailers it is a expected amenity like a toilet and shower.

Condensation Line

The A/C unit is going to pull moisture out of the air, and that condensed water is going to need to go somewhere. Most aftermarket A/C units just let this water drip down the outside of the trailer. After you have spent hundreds of hours (or maybe thousands of dollars) polishing your skins to a high shine you really don't want to have water running down the outside of the trailer. Dometic offers a nice "low profile" A/C unit with 13,500 BTU's. This is cooling enough for a 20' or under trailer size with good insulation. You need two of these units for the larger trailers. VTS also stocks the accessory condensation drain kits for this unit. By the time you buy the A/C compressor unit, the retro fit drain kit, the inside air distribution panel, and finally include the freight, your at $1,000. in round numbers "per unit" in parts. You need to carefully route a 1/2" PEX drain line so that the condensation water will drain by gravity through the ceiling and down the wall and exit through the floor. This is just another reason you want to do the A/C install when you have the trailer fully apart.

Power Requirements

You need to run the proper large and stiff sized wiring inside the wall and ceiling. You need a 30A shore power circuit to your breaker panel as a minimum. You want a dedicated 20A circuit directly to the A/C unit. This circuit needs to have 12 gauge wiring from the circuit breaker to the A/C unit. Should you desire to dry camp and power the A/C with a generator, you will need a "large" 3.5KW sized unit. A normal "single" Honda 2000 Watt generator will not power a A/C unit, and the rest of the trailer.

Noise

You are going to have a lot of fan noise from these units. It's not objectionable during the day, but it's a problem at night. This is the reason I would do an A/C "only" unit. Dometic also offers a heat pump, heater/air condition unit, but I've found it's just too noisy at night. Remember, when we install these in a aluminum framed trailer the framing and skin acts like a sounding board and amplifies the noise. Note, the fan runs all the time, and only the compressor cycles on/off during normal operation.

Custom Paint

The outside covers are plastic and are white. Many of our trailers are polished aluminum and the white plastic really sticks out. I have had good luck priming the plastic with two part epoxy primer, then spraying them with a quality automotive single stage silver paint. My trailer and A/C unit is

stored outside 365 days a year and it looks like new after a couple of years. I have also used Jeff Styles to custom paint the inside panel matching my dark amber wood finish. He's "really good" at his trade.

Regarding existing A/C units that might be leaking. The installation is very simple. The units are just sandwiched between the trailer roof and the trailer ceiling. They are held together with four very long threaded 1/4" bolts in the corners of the 14" by 14" vent opening. There's a large, very dense foam rubber seal. This seal dries out and sometimes needs to be replaced. They are generic, and available from VTS, and most other RV suppliers. To install, you need to remove the inside air distribution panel, the four bolts, and the electrical wires. Make note of the wire colors, so you reconnect them to the same terminals. It's obvious that you need to make sure the trailer has no power connected while your doing this work. You need a helper on a ladder outside. One person is going to get under the A/C unit inside the trailer and lift one end (about 50#) of the unit up a couple of inches. The person on the ladder is going to slide a section of 2 by 4 under the raised end to support the A/C weight. Then you raise the other end and support it with a second 2 by 4. You can slide out the old seal and slide in the replacement from inside the trailer's vent opening after it's raised. You don't have to remove the entire unit from the trailer. Drop the unit back down on the new seal, align the bolt holes and evenly snug up their tension. Let is sit for a day to settle, and retighten. The entire job is maybe only one hour, requires minimal tools, and is not technical.

I have done only one trailer with a removable Home Depot window unit. It was a trailer that I rebuilt into a Park Model at a customer request. I was not happy with the result and would not do another.

Appliance Troubleshooting and Repair

Josh Hicks – Tin Can Handyman
925-914-7743 or josh@tincanhandyman.com

Items needed

Air compressor
Wire brush
Vacuum cleaner
Steel wool (very fine 0000)
12v Test light/Multimeter
Fire Extinguisher
Flashlight
Safety goggles
Soapy Water in spray bottle
Denatured Alcohol

Maintenance

- A clean appliance is healthy appliance
- Appliances should be cleaned every year
- Lack of cleaning will lead to premature failure
- Ensure clean airways (Intake/exhaust)
- Remove dirt and corrosion buildup
- Remove insect nests
- Check flame health
- Check components for damage or maladjustment

Testing items needed:

A. In trailer
• Check for good 12v power (low voltage can cause many appliances to malfunction)
• Check for good flow of propane, clean flame on stove will often show health of the propane (unless your stove is the problem)

B. Bench testing
• Charged battery and set of clip on wires (for easy hookup)
• 110v cord for testing elements
• Propane **Make sure to test your connections for leaks**

Thermocouple

Not a small gas line but an electric device. Tube like lead contains insulation and an inner wire. Outer sheath is ground; if you look at threaded end you see the outer nut and the contact on the very end that is separated by piece of insulating material. Used whenever you have to push, pull, twist, or hold something to keep it lit. Creates electric current used to hold open electromagnet in gas valve. Flame goes out, electrical flow stops, and valve shuts off flow of gas. Check for adjustment or soot build up.

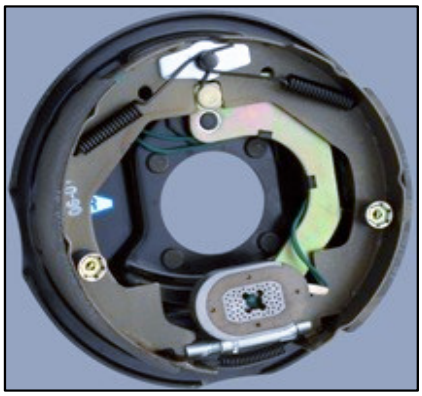
Trailer Brakes and Bearings

with Rick Burros

Brake Basics

Trailer Brakes:

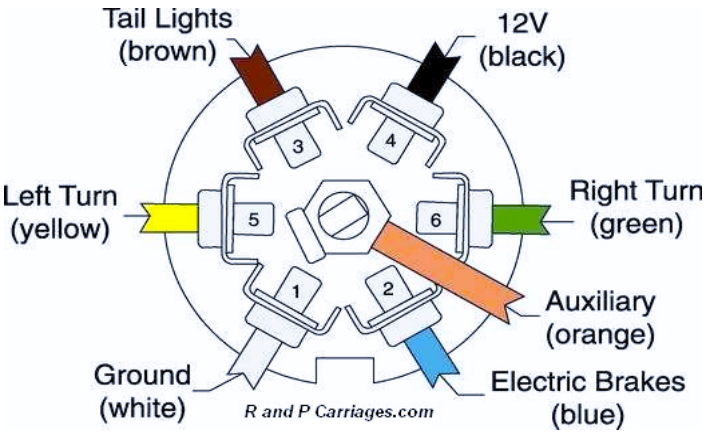
Your vintage trailer may or may not be equipped with trailer brakes. If it is a small, lightweight trailer that never had brakes - it is not an issue as long as the vehicle you are towing it with is properly sized for the trailer*. (Assuming you have the necessary hitch components to safely tow it.) Many larger, heavier trailers did come equipped with trailer brakes. These require a tow vehicle that is equipped with a trailer brake controller and the proper wiring for electric trailer brakes. Your tow vehicle brakes were only designed to stop the weight of the vehicle, not an additional one or more tons behind the vehicle.

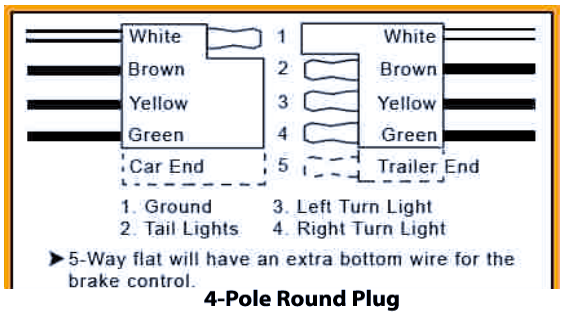


***Trailer VS Tow Vehicle**

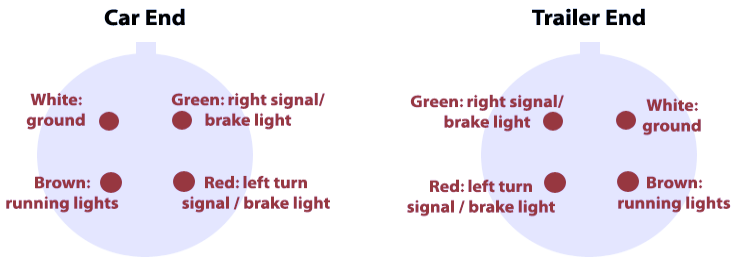
Know the tow rating of your vehicle -Gross Vehicle Weight Rating (GVWR). This can be found in the owner's manual or may be found in an on-line search. The tow rating of the vehicle should be equal to ***or more*** that the Gross Vehicle Weight of the trailer you are towing. Some vintage trailers are small and lightweight, but other longer models can easily weigh 5,000 pounds or more. Don't ever attempt to tow a 6,000-pound trailer with a vehicle rated to tow 3,500 or 5,000 pounds. If you know the name and model of the trailer you are purchasing lots of information can be found online. Do a search and try to locate the weight information about the trailer. It's not uncommon to load the trailer up with camping supplies, filled water tanks, etc. The tow vehicle should still be rated to safely tow the ***loaded trailer***.

7-pin Plug





4-Pole Round Plug



RICK BURROS, R & D MOTORSPORTS, SANTA CRUZ, CA. DIRTBIKERICK@GMAIL.COM

Moving an Old Trailer

Check the trailer brakes before moving a "new-to-you" vintage trailer. Transporting a trailer without trailer brakes can be extremely dangerous. You should see if the brakes are present and operating properly. Check to see if the light plug on the trailer mates with the trailer plug receptacle on the tow vehicle. A four-pin plug only is for lights. There are no trailer brakes. Moving this trailer should be done carefully. A seven-pin connector covers lighting and braking control and a "charge-line" circuit for charging a battery in the trailer.

Check the brakes! With the trailer hitched to the tow vehicle and the trailer light cord plugged in to the tow vehicle receptacle slowly move forward and tap the vehicle brakes. You should feel the trailer brakes engage. It might be necessary to adjust the power setting on the brake controller. If you do not feel the brakes engage there is either a problem with the wiring or the trailer brakes do not work.

Electric Trailer Brakes

The brakes on your vintage trailer operate the same as new production trailers. The brake controller sends voltage to the field coils mounted on the brake backing plate. When voltage is applied to the coils, a magnetic field is built up. These coils are floating on a round disc mounted to the brake drum. As voltage is increased, the coils are attracted to the rotary disc. The coils are mounted on a linkage that pushes the brake shoes against the rotating brake drum. The more voltage the more brake pressure and the more stopping power.

Brake Controllers

Brake controllers are the physical link between the brake pedal and the brakes on the trailer. Without the brakes on the trailer, uncontrolled weight can push forward, creating the potential for an accident. There are two types of controllers used today: Time or Inertia.

Time-based/delayed

Time-delayed controllers use a preset amount of braking power. There is a delay until the unit ramps up to pull power. These are less expensive, and not as precise, but still will do the job.

Inertia - Proportional brake controllers (Recommended)

Proportional brake controllers use inertia sensors to detect the amount of braking force needed and automatically match that force to the trailer brakes. They work smoother and offer a better braking operation. The wear on the vehicle's brakes is reduced as well as reducing wear on the trailer brakes. Proportional controllers offer every action of your tow vehicle's brake pedal to work precisely and smoothly with your trailer brakes. These are a more expensive choice, but highly recommended.

Brake and Wheel Bearing Inspection

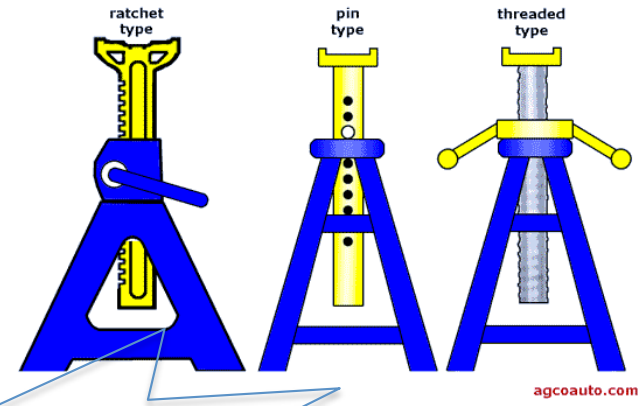
Jacking Up the Trailer

On a flat and level working area start with one wheel at a time. **Remember to block the wheels on the opposite side.** Before jacking up, break loose the trailer wheel lug nuts. You can also leave your trailer hooked up to the tow vehicle. This can help for two reasons;

1. The trailer won't roll when jacked up
2. You will be able to test the brake operation with the brake controller.

Place the jack as close to the outer end of the axles as possible so as not to bend or damage the axle. Jack up the trailer just so the wheel clears the ground about one inch.

SAFETY/JACK STAND – Install a separate stand under the frame. Lower the jack and set the stand-but leave jack loaded as well. In other words, use the jack to support the trailer in addition to using the safety stand.



RICK TIP - SAFETY FIRST!
ENGAGE BRAIN BEFOR USING HANDS!

INSPECTION

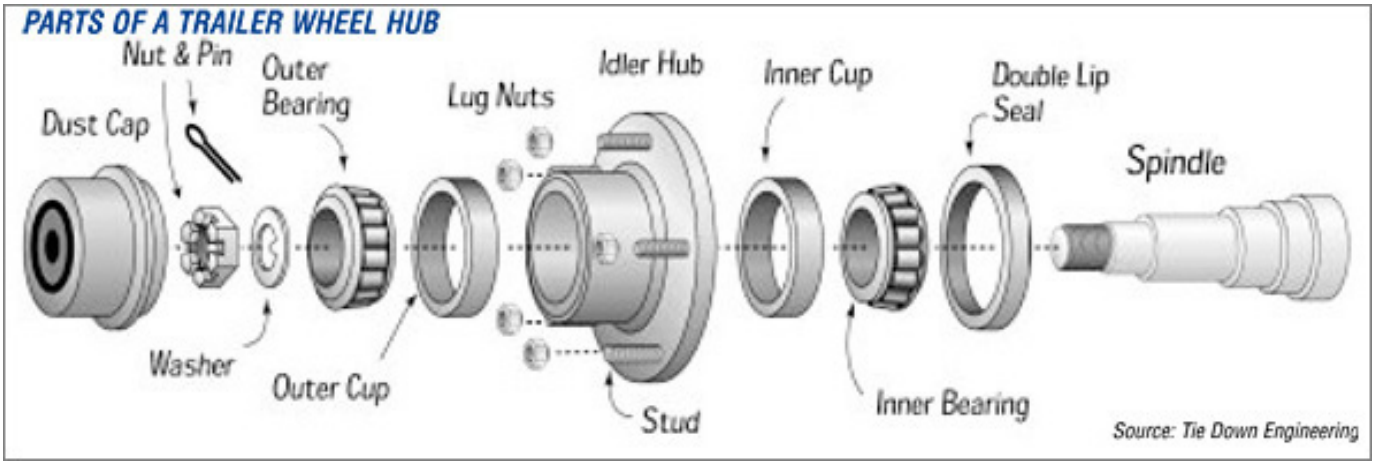
BEFORE the wheel is removed:

- SPIN the wheel,
- PULL the break-away pin to see if the brakes lock up the wheel
- LISTEN for any yucky sounds, like a bad bearing – may sound like a grumbling or a rough vibration. You might hear the magnet and shoes dragging against the rotating drum. (A bad bearing will sound different.)
- LOOK at the spinning wheel and tire. Is the rim bent? Does the tire look out of "round?"
- CHECK the tire for sidewall damage, cracks, nails, tread damage, or separations.
- CHECK for wheel bearing play: grab the wheel at the 12 & 6 o'clock position and push/pull away from you. (repeat for each wheel)

REMOVE the WHEEL: NOTE -Sometimes wheels won't clear the outer skirt area or wheel opening of the trailer when jacked up by the axle. In this case you will have to support or jack up by the trailer frame to get enough clearance in the opening.

- REMOVE the wheel and INSPECT the lug nuts and studs for any damaged threads.
- INSPECT the wheel hole opening for damage from lugs being loose.
- DISCARD any worn or damaged wheel hardware.
- REMOVE bearing dust cap.
- REMOVE cotter pin and unscrew the castellated nut to end of the spindle, but don't remove the nut yet. (A **castellated nut**, also called a **castle nut** or slotted **nut**, is a **nut** with slots (notches) cut into one end).
- GRAB the drum and pull toward you while rotating it. (The drum should pull out to the nut on the spindle.) PUSH drum back on.
- REMOVE the castellated nut, washer, and outer bearing and REMOVE the drum.

If the drum will not come off, the shoes might be hung up on the inner "lip" of the drum and the shoes will need to be backed off with the brake adjusters.



<u>BRAKE INSPECTION</u>

REMOVE the brake drum – INSPECT drum for cracks, gouges, and uneven wear.

- Are pressed-in lug bolts loose?
- Does the brake shoe have any cracks?
- Is the lining separated from the shoe?
- Does the thickness seem adequate?
- Are there any broken return springs? Magnet wires? Magnet linkages?
- Check and "free-up" brake shoe adjusters as needed.

GRAB the backing plate and check for looseness. Retighten plate as needed.

If you find damage/wear in any of the above items, you may want to replace the backing plates as a new complete assembly. (Easily available at a vintage trailer vendor such as Harp's RV) Brake drums should be machined at a local shop if needed. The minimum thickness should be stamped on the outside of the drum. Replace the drum if the thickness is outside of the specs.

BEARING FUN!

If the trailer hasn't been used for a period of time, the grease in the bearings and hubs can get hard and lose its lubricating qualities. If you tow a trailer in this condition the metal on metal contact, without sufficient lubrication, may cause friction and heat. This can result in severe damage to the hub, axle flange and other components.

WIPE out yucky grease from the hub and outer bearing "race".

- INSPECT outer race for pitting.
- REMOVE grease seal and inner bearing. If you don't have a Seal Hook – one can be purchased at a local auto parts store.
- INSPECT inner race for pitting.
- CLEAN bearing in solvent (low flammable liquid such as paint thinner or mineral spirits). (USE RUBBER GLOVES! You only have one liver!)
- INSPECT for pitting and galling. Remember when we hand-spun the wheels and listened for bearing noise? You are likely to find a bad bearing on the drum that sounded bad when it was rotated.
- DISCARD any bearings that show any wear. Each bearing, race and grease seal have part numbers by the manufacturer stamped on them. That can be matched up at any good parts store. (Napa has good stuff.) (See next section)
- REPACK the bearings if they look OK. (See next section)

NOTE: Don't even think about throwing away any of the old parts until you have installed your new ones. I even keep a set of pre-greased old bearings and a new seal with me on all trips just in case I have a bearing issue on the road. Also – write down the part numbers and keep a copy of the receipts in the trailer for future reference.

REPLACING WHEEL BEARINGS

Get brake spray and blast the shoes and backing plate assembly. Use a drip pan to catch yucky stuff. Blast the inside of the brake drum. DON'T BREATHE FUMES – you only have one brain! The next steps will require a ball peen hammer, drift punch and bearing race driver kit. If you don't feel comfortable doing the bearing replacement, a local machine shop will swap out the races for a nominal fee. ($25?)

Drive out the old races. Lay down drum with studs facing up. Using drift punch drive inner race out evenly until the race drops out of drum. You can see the back-side of the race from the outside looking through the dust cap opening. Make sure you are hitting the race and don't hit the cast iron drum! Flip the drum over. Place on 2x4 or 2x6 blocks with the wheel studs on the blocks. Drive out the outer race the same way you did the inner race. The races must be driven out and installed EVENLY otherwise they will be cock-eyed and bind up. The races will take some force to drive out. If they just fall out… that's not good! Inspect the hub where the bearing sits for galling and wear. It may have seized at one time, and may have spun, damaging the hub. If this is the case the hub drum should be discarded!

Drive in new races. Pick out a driver that is slightly smaller than the race you are driving in. Clean the hub and install the race "numbers down" and "taper up." I use a hammer only until the race is started then I switch to the driver. Send race home evenly until seated. You will hear when it seats – it will sound different.

Then use what God gave you and look at your work. Can you see that the race is at the bottom of the hub? Look from the other side as well. Drive home the other race just as you did the first – **CHECK YOUR WORK.**

PACKING THE WHEEL BEARINGS

Wearing rubber gloves, repack your bearings as follows. You can pack by hand or buy a bearing packer at a parts store. *Hand-packing is just plain cool!* Use high-quality speed and temp-rated wheel-bearing grease.

WHEEL-BEARING GREASE

What the letters mean

- G - Certified for use in automotive wheel bearings
  - A - Good
  - B - Better
  - C - Best
- L - Certified for use in automotive chassis
  - A - Good
  - B – Best

- Start by JAMMING grease into the bearing. Rotating the bearing as you go. When you think you're done… do it again!
- INSTALL inner bearing into the hub. Take new grease seal and pack the backside of the seal with grease. This will keep the micro-spring that keeps the tension on the seal lip from popping off when you install it.
- USING one of the bearing drivers that is bigger in diameter than the seal – use the flat side of the driver to tap down the seal flush with the top of the hub.
- INSPECT the spindle. Wipe off the old grease and check where the inner and outer bearings sit. They should slide off and on by hand.

- CHECK for galling and/or seizing on the inner race to spindle area. If no issue is found they it is time to re-assemble.
- MAKE sure you use brake spray on the shoes and backing plate. Make sure there is no grease on or on the inside area of the drum especially where the brake shoes contact.
- SLIDE the drum onto the spindle until it stops. Slide on pre-packed outer bearing, washer and install castellated nut. Tighten the nut as you rotate the drum. If drum binds up and does not rotate freely… take back apart and find your mistake.

MORE BEARING ADJUSTMENT FUN!

ADJUST BEARING PRE_LOAD

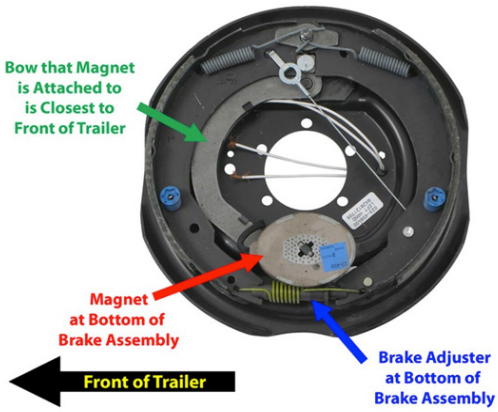
By the book, if your spindle-nut threads are 12 threads/inch, you torque the nut while rotating the nut to **50 ft. pounds**… and then back out ¼ turn. Install a NEW cotter pin. (Never re-use old cotter pins) There are different ways to set the "pre-load." I install the wheel and tire. Grabbing the wheel at the 12 & 6 o'clock position, I check for play by pulling and pushing in and out. I slowly turn the nut clockwise until zero play is felt. Then I snug the nut a little further until the cotter pin holes line up on the spindle and nut.

RICK TIP:
Sometimes when adjusting bearing pre-load you can't line up the holes on the spindle with the castellated nut without either the bearing being too loose or too tight. Try swapping the nuts side-to-side or the washers side-to-side. Try various combinations until you get the correct pre-load. I have also used a belt sander to "deck" the washer-side of the castellated nut. Sometimes it takes just a little bit of material removal to get the pin-holes to line up. Check your brakes and bearings ANNUALLY or even 10,000 – 12,000 miles.

BRAKE ADJUSTMENTS

Now let's adjust the brakes….

- BACK OFF both adjusters until wheel turns freely. (There may be only one adjuster on some trailers.)
- Using one adjuster at a time… TIGHTEN the adjuster while rotating the wheel in driving direction until the wheel NO longer turns freely.
- BACK off adjuster until wheel begins to turn freely again. (This could be 3-5 clicks on the



adjuster) REPEAT with the second adjuster if present.

- PULL break-away pin and see that the wheel has locked up.
- REINSTALL break-away pin and see that wheel now turns freely again. If so – lower the wheel until it touches the ground and torque the lug nuts in a "criss-cross pattern" to specs. (varies related to lug size.)
- NEVER, NEVER, walk away from a loose bolt!

Lug Size	**Torque**
½"	90 -120 ft. pounds (Average trailer lug-bolt size)
9/16"	120 – 140 ft. pounds
5/8"	140 – 160 ft. pounds

REPEAT the same service to the remaining brakes and bearings on the trailer.

RICK BURROS, R & D MOTORSPORTS, SANTA CRUZ, CA. DIRTBIKERICK@GMAIL.COM

RESTORE

ALUMINUM SIDING

Replacing Siding is a Very Do-able Repair

By Paul Lacitinola

New siding is installed from the top down. Windows, doors and edges are trimmed after panels are secured to the frame.

Restoring a vintage trailer, as opposed to buying a finished one, offers you the opportunity to choose the finishes and amenities that suit your style. The largest surface being the exterior siding (predominately aluminum) can be restored in several different ways.

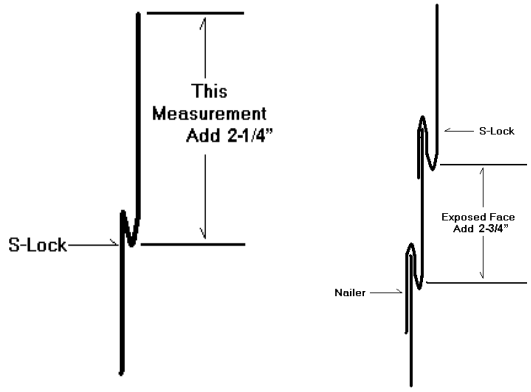
1. **Original Patina-** If the original paint is intact, why mess with it. Sometimes less is more. Don't be ashamed if your budget or personal style is attracted to the possibility of preserving your trailer's natural beauty.

2. **Paint-** There are many different types of paint that can be used on the exterior of trailers. Everything from exterior house paint, industrial metal paints to high quality automotive paints. Paint is a popular choice with a variety of options that would require its own article to cover all of the possibilities.

3. **Polishing-** Shiny trailers get a lot of attention. Achieving that reflective shine is A LOT of work. It requires some practice, products and equipment to attempt it yourself. Having a trailer polished by a professional will cost over $100 per foot and requires a fair amount of maintenance to keep it up.

4. **Replacing the Siding-** You may consider replacing siding that is damaged. Replacing the exterior siding can also be an option to completing the curb appeal of your project. New aluminum siding can be ordered in a variety of patterns and custom lengths. You can order it in painted or polished finishes to suit whatever look you are

Measuring RV Siding



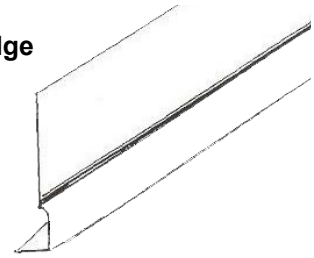
If metal is off coach: *measure from the top of the metal to the bottom of the S-lock and add 2-1/4.*

If metal is on coach: *measure the exposed face add 2-3/4.*

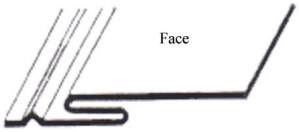
Common Terms

Roof Seam for Factory Sealed Edge

Auto Mold Edge



S Lock



The sides of the trailer go on first and are trimmed before installing the roof and end pieces.

going for. (**www.hemet-valleyrv.net**)

Restoring a vintage camper trailer yourself can present many seemingly impossible tasks that may be more do-able than you think. Taking apart your first trailer can be scary until you realize how simple the construction of a canned ham is. Dented aluminum siding, water damage & rot to interior panels and frame-work, are all typical reasons that the skins may need to come off. With the skins (siding) removed you can really assess the structural repairs that need to be made. After making the necessary repairs to the wooden framework, do you put the old siding back on or opt for new aluminum?

If you are going to put the old siding back on it is imperative that all of your window placements and anything that needs to "line-up" with the original siding are in the same place. Aluminum is unforgiving in that it will bubble and wrinkle if forced to adhere to a shape it doesn't want to. (As a side note it is often easier to replace a panel than try to repair a dented piece of aluminum. Aluminum stretches when hammered and is usually more time consuming to do body work on it than just changing out the damaged panel for a new one.)

Replacing all of the aluminum on your trailer can be the answer to many issues. Years of wear and tear to the soft bodied aluminum may be best fixed with all new skins. Pre-painted aluminum is very durable and the pre-polished material can save hours of polishing and provides results that will "WOW" admirers wherever you go. Hemet Valley RV can help you with measuring and all of the other details to make your project go smoothly. They ship the material to you by Fed Ex so it doesn't matter where you are calling from. (We received 13' panels of polished material delivered to our door.)

To replace all of your siding you will need to remove the old siding. Use scrap lumber to diagonally brace the trailer so it does not move out of square. It is best not to move the trailer once the siding is off. The siding offers a lot of shear support and the trailer is not as stable when bare. As you disassemble the trailer siding, pay attention to how it comes apart. To install the new siding you will simply reverse the process.

In these photos, Tim Brown is doing a complete exterior re-skinning. The customer wanted a polished trailer and some of his original skins were dented and other areas had small dings. Rather than polishing, they decided to re-skin the trailer with polished aluminum crafted by Hemet Valley RV in a "very close to original" pattern. The pictures show that the sides of the trailer were covered first. Measuring up from the bottom of the trailer, a chalk line was snapped where the top of the bottom section would sit. With that mark the top piece is stapled into place along the top and bottom edge. It is left untrimmed and hangs over on the ends. The bottom piece of siding is slipped up in to the "S-Lock" joint at the bottom of the top piece. The "Auto Mold" detail at the bottom of this panel wraps under the wooden frame for a finished look. The bottom of this panel is stapled underneath the trailer into the "Auto Mold" detail so the staples are not visible unless you are underneath the coach.

Fasten the side panels with a minimum number of staples until the windows have been installed. The windows are easy to cut out from the inside by drilling a hole from the inside and using a high speed metal saw. Install the windows to help hold the metal down. Remove any of the staples holding the panel (if needed) to relieve any "pillowing" of the aluminum. (Remember to cut out at least one window you can climb through to cut out the door!)

Both sides are completed in the same fashion prior to the center (roof) section being installed. At this point you can trim the overhang off of the ends of the trailer, following the curves. We used a cutting wheel to cut through the "S-Lock" and a high speed metal saw for the rest. Similar to the sides, snap a line where you want the "S-Lock" to land. Attach the top piece, then slide the bottom piece (or pieces) into the "S-Lock" joint. The "S-Lock" has a slot that holds the piece of siding that is below it, in place. The "bottom" piece slides up into the S-lock of the upper panel and does not require staples in the edge held by the S-lock.

Once the top skin (roof) is in place, trim and fold 3/4 of an inch over the edge and over the newly installed siding and staple it down. This takes some patience and practice. Take your time and you will get the hang of it. After that it's time to install butyl tape and j-moulding.

Note: The pre-polished aluminum comes coated with a protective plastic film. It makes the finish look "dull" in these photos.

RESTORE

NO LEAKS ALLOWED

Waterproofing Your Trailer with Sealants

Spring and Fall are the most popular times to rally. Weather is typically more cooperative than in the heat of Summer or a frigid Winter. The more you camp and rally, chances are you will experience an unexpected rain shower. If you store your trailer out doors you must make sure that it is water-tight. Easier to seal it up than to make the repairs caused by moisture damage later.

John Abbott of Retro RV's in Phoenix, AZ (www.retrorvs.com) and Scott and Wendy Campbell of Retroluxe Vintage Trailers, El Dorado, CA (www.retroluxevintagetrailers.com) helped with this how-to guide to waterproofing trailers. Both of these shops can also help you service your trailer if you don't want to attempt it yourself. The products suggested here can be purchased from Vintage Trailer Supply or Harps RV.

FINDING LEAKS

Don't wait until you have warped, rotten or moldy panels. By the time you see leaks on interior panels, chances are you also have rot in the frame work of your wood framed trailers.

We do pressurized tests to find leaks and then verify that we fixed them. There's a fancy tool, or you can use a large "squirrel" fan rolled up to the door. Seal the rest of the doorway opening using brown paper and blue tape and turn on the fan. Spray the outside of seam and windows and such with a soap solution. Large bubbles will form for the smallest leaks. Take pictures of the bubbles on your phone to reference while sealing. Rinse off the trailer and let it dry before grabbing the Vulkem and syringe. Let the Vulkem dry overnight before retesting.

TremPro 635 is the modern version of the legendary Vulkem polyurethane sealant. It is a technologically advanced no-VOC silylated polyurethane. It meets or surpass the performance of the old polyurethanes like Vulkem and Sikaflex 221 in transportation applications in every meaningful way.

It utilizes a solvent-free technology, which represents technical advances over existing polyurethane systems. TremPro 635 is specially designed for use as a topical sealant in the fabrication of trailers, trucks, campers, buses, trains and specialty vehicles. TremPro 635 demonstrates excellent physical properties regarding adhesion, vibration, movement, shear strength and weather-ability."

Replacing Your Drip Caps

Vintage Trailer Supply can send you new *painted* drip caps, but what if you want polished or brushed aluminum? Use a propane torch to heat the metal and the paint almost disappears. Clean with water and a scuff pad and polish them if you like. ***Watch the video: www.vintagetrailersupply.com. Search for: "Vintage Style Drip Cap"***

Waterproofing Tips

1 **Resealing windows, doors, roof vents and drip rails (aka J moulding), completely clean the area** to be sealed by removing all old sealant, silicone and dirt. Use lacquer thinner to remove any old wax or oils left behind. Lacquer thinner works best because it cleans great, removes everything and completely evaporates. Most trailer paint is either baked enamel or a paint that will tolerate limited exposure to lacquer thinner.

2 **Resealing drip rails:** prior to installing the drip rails apply Trem Pro 635 Polyurethane to the area that will be covered by the drip rail, we cover the roof edge seam,(where the top skin is folded over the side walls) staples and screw holes. Trem Pro 635 is available from Vintage Trailer Supply, it comes only in gray, not a problem since it will be covered by the drip rail.

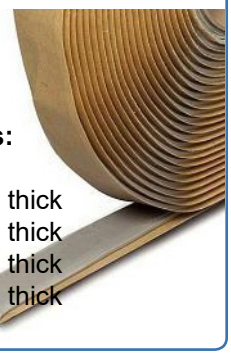
3 **Attach the new or cleaned drip rail, windows, and vents using Butyl tape.** *Note: Using butyl tape in warm or hot weather is a nightmare. It will stick to everything and get everywhere and is a major pain to clean up once it sticks. Store butyl tape in the fridge and keep it cold. It is easier to work with when it is cooler. After the rails are installed, preferably while it is still cold, trim off the excess that oozed out when you tightened down the screws.*

4 **Silicone, the final step.** This is optional, and sometimes controversial step. Using masking tape, mask a clean straight line about 1/8" from the top corner of the roof to the drip rail. On most canned ham vintage trailers the drip rails are bare aluminum, we have found that using aluminum colored silicone is the way to go, once the silicone is applied, smoothed by using your pointer finger with appropriate gloves and the masking tape is removed, you have a very clean looking sealed drip rail. This method can also be applied to windows, vents, doors and any other place where sealing bare aluminum is needed. Do not use white or clear or universal (cheap) silicone. It will fail and end up looking dirty and discolored within a short period of time.

These steps provided by Retroluxe.

Butyl Putty is a pliable non-hardening 100% butyl mastic. It is a superior replacement for the original non-butyl putty tape used on vintage travel trailers. It is tacky and, unlike old fashioned putty tape, does not harden over time.
It is used when installing moldings, windows, doors and vents. It waterproofs overlapping metal and seals around fasteners when they are inserted through the tape.

The gray putty tape comes in 30 feet rolls and can be trimmed to width with a utility knife.



Available in 4 different Dimensions:

1/2" x 1/16" thick
3/4" x 1/16" thick
1/2" x 1/16" thick
3/4" x 1/16" thick

Despite common mythology, silicone sealants are safe for aluminum and do have an important (but narrow) place in vintage trailer restoration. While we recommend using only polyurethanes (like TremPro 635 and 636) for most applications, silicone works better in a few applications. Here are a few examples:

1. ***Use as a plastic to metal adhesive*** (like applying the finish bead to Fan-Tastic vents and fans).
2. ***Use as a glass to metal adhesive*** (like bedding 1966 and 1967 Airstream Corning glass).
3. ***Use as a weatherstrip adhesive*** for silicone rubber weatherstrips and gaskets.
4. **Use as a caulk** when doing plumbing with kitchen and bath fixtures.

TremPro 644 RTV is specially designed for sealant joints between most non-porous materials such as glass, aluminum, metal and metal alloys.

Captain Tolley's Creeping Crack Cure can find and fix mystery leaks without having to take everything apart. This is a one-part water-based acrylic co-polymer penetrating sealant. The Creeping Crack Cure is so thin that using capillary action it can find its way right inside fine seams and joints to set to a clear flexible seal. It traces mystery leaks. The rapid absorption of the sealant into the seam indicates the potential leak. Even excellent conventional sealants cannot do that. There's no need to remove old sealants. You just apply the sealant along the line of a crack or joint until no more is absorbed. It is waterbased and non-toxic.

PRO TIP: TIRES

Trailer tires don't wear out, they age out

John Abbott
RetroRVs.com
Phoenix, AZ 85028

Here at RetroRVs we say: "Trailer tires don't wear out, they age out." There is a date code on the side of tires in the format WWYY (where WW = the week and YY = the year) of when the tire was manufactured. If the code does not have that format, the tire is very old (like the 90's!).

Trailer tires must be replaced after 10 years from the manufacture date. This is cheap insurance.

Trailer tires must be replaced after 10 years from the manufacture date. This is cheap insurance. When a tire blows it will usually tear up the trailer fender and belly pan. If the tread comes off, there is a 50% chance it will go up. If it goes straight up, it will likely travel to the ceiling of the trailer, smashing everything in its way. It's a big mess that can usually be avoided by just keeping good tires on your baby that are properly inflated. Every tire has the maximum cold pressure on the side too. And proper tire pressure gives you better gas mileage too.

Now we did try a set of bias-ply tires on one of our rental trailers, once, and they wore out it a year! Radials last us for at least 5 years usually. And our vintage rental Airstreams see a lot of miles every year. So definitely get Radial Trailer Tires. We use (and recommend for our renovation customers) Carlisle Radial Trail RH tires. (They used to have heat related problems, but Carlisle has fixed that in their current tires.) Goodyear Marathons were good for a while but are being produced in China again and are not reliable. Goodyear came out with a new USA-made trailer tire in January, the Endurance, which holds promise.

Some folks like to run LT (light truck) tires on their trailer. They are quieter and have similar load ratings to an ST (standard trailer) load range D tire. So LT tires are an option for lighter trailers. Heavier trailers need an LT load range E tire. And if you are picking up a new (for you) trailer and it has car tires on it, go straight to a tire store! S-l-o-w-l-y.

White walls look great on a vintage trailer. They add about $100 per tire usually. A nice set of baby moon hubcaps (hubcapmike.com) on sandblasted and painted wheels look great too. Hubcap Mike also has a full hubcap that has a full moon hubcap that quickly dresses up even an old rusty wheel. Few people will even notice fluted edges on trailer tires, so we're not sure they are worth it unless you are competing in trailer shows.

It is hard to find a tire shop that will even work on a split rim. Most of them will run away from you like you're crazy. And maybe you are! It is just too dangerous filling them with air since they can explode and really hurt someone. To fill split rims safely they need to be placed inside a steel cage to fill them, and few shops have a cage anymore. The idea behind split rims was that you could replace the tire on the side of the road. Maybe you really are crazy.

Trailer tires must be replaced after 10 years from the manufacture date. Also be sure to carry enough Lynx Levelers and Stop 'n Chocks (In case you can't find a rock.) Lynx Levelers lock together to create a stack you can drive up and on. Chocks keep you from rolling away. See their ad on page 30.

Trailers in Arizona see lots of use in the winter, so that's not the only time we protect our tires. The sun does beat up your tires (as does the heat on the road). Covering your tires when they are not in use does help. And if you're not going to use your trailer for a while, and you have torsion axles, consider putting your trailer up on blocks and letting those axles hang down. This will make the rubber inside them last longer too. If you have leaf springs on your trailer, you don't need to worry about this.

RESTORE

1962 Deville pictured here "before" and "after" below right, is owned by Paul and Caroline Lacitinola.

BLOW OUT

I had never had a blow out on a trailer in 40 years of towing...

By Kathy Lawson

Although my husband and I own two vintage trailers, when we camp for any length of time we always take our 5th wheel trailer. My 1967 Cardinal is almost done, and my husbands 1958 Aristocrat is next in line. Since we actually spend most of our camping days outside anyway, we decided that the vintage trailers are easier all the way around.

On July 31st, 2017, while traveling back from an Elks RV outing in Fortuna, CA over state highway 299, I was driving and had a blow out of a rear tire on our 2010 Wildcat 5th wheel. My husband and I, along with our German Shepard, Jade, were in the area of Douglas City, CA. For anyone unfamiliar with that area, that's a very remote, windy, steep road.

I had never had a blow out on a trailer in 40 years of towing. Apparently, it's quite common not to feel a blow out on a 5th wheel with dual tires. The only indication that I had a blown tire was the indicator light on the truck dash when the brake cable was damaged in the blow out. It did extensive damage to the wheel well, the frame, and the side of the trailer. If this had been a single axle vintage trailer we probably would have lost control and the outcome would have been very serious.

We were left stranded on the side of the road in hundred-degree weather. Good Sam towing was able to get us help to change the tire. However, it took 2 hrs for the tow truck to get to us and another 2 hrs to change the tire. Upon inspection, it was discovered that the damage to our 5th wheel was too extensive to tow it safely. 5th wheels can't be put on just any flatbed. They require a lowboy. (Makes our vintage trailers look better and better.) The company that Good Sam contracted to tow us wouldn't come out until the next morning. With no power to power up our air conditioner, (we had left the generators home) and very little water (unless we're dry camping, we don't travel with a lot of water in order to keep the weight down) we were left with no choice but to limp the trailer out of the mountains. Going 15-20 miles per hour, it took 3 ½ hours to go 40 miles. We're fortunate to have made it down in one piece. What a nightmare!!

I drove the rig to All Wheel Alignment in Redding, CA. A preliminary inspection shows all the obvious damage around the wheel well along with broken welds and bent hangers on both side of the trailer. No one knows what came 1st (kind of the chicken vs. egg scenario).

However, the reason I'm writing this is to encourage everyone with a vintage trailer to have the undercarriage of their rigs inspected at least once a year by a qualified shop. In my case the blow out could have caused the damage to the frame and hangers, or a damaged frame could have caused the blow out. We'll probably never know for sure. If this can happen to a relatively new trailer, what damage is lurking under our little "vinnies"? So, before you go anywhere with your rig have the frame inspected! DON'T get stranded like we did. It will ruin an otherwise great vacation in a heartbeat (best case scenario) or cause a serious accident (worst case scenario). Be smart. Be safe. Have your axles checked!!!!!

I encourage everyone with a vintage trailer to have the undercarriage of their rigs inspected at least once a year by a qualified shop.

TIGHTEN YOUR LUG NUTS!

We lost a wheel that came up through the wheel well and busted the cabinetry inside before tearing up the outside of the trailer.

RESTORE

Tools & Tips

By Paul Lacitinola

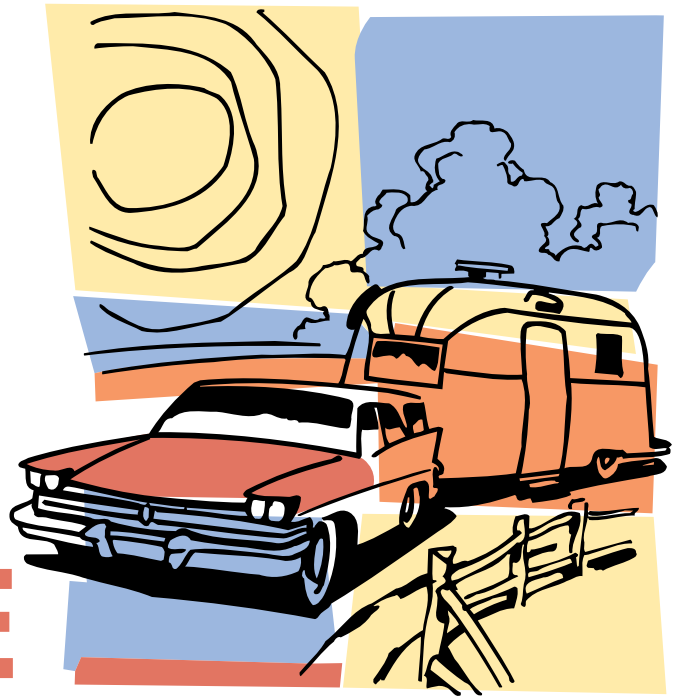
We are restoring a 1955 Spartan and came across a couple of tools and tips to share. We restore our own trailers and try to do most of the work ourselves. We do turn to friends for help and advice in an attempt to do things the right way the first time. After considering several different types of insulation options, we decided to use R-Tech 1-1/2 in. x 4 ft. x 8 ft. R-5.78 Rigid Foam Insulation. It is the same thickness as the wall "studs" and it seemed like the best solution for this project. Thinking we would take advantage of the very rainy weather we have been having in California we thought we would knock out the insulation in a couple of evenings. Once we got started we realized that the moisture created in the trailer, caused by the cool outside air and the warmer inside air, was not good to be insulating over the top of. Finishing this job will have to wait until the weather cooperates.

We had started to install the insulation by cutting the panels the width we needed to fit them between the wall studs. We would measure the cut and then slice the Styrofoam with a razor knife and then snap the foam back and cut the back side along the crease with the knife. It worked but it was messy and pieces seemed to usually end up a little too big and would have to be trimmed. With work stopped because of weather we moved on to other projects. A friend stopped by to check our progress and recommended cutting the insulation with a saw. Simple solution to making straighter more accurate cuts with less mess. He recommended the Stanley Sharptooth Smooth Cut saw which we found at the home improvement store for about $13.00. It is a 10 in. Fine-Finish Mini Utility Saw that will cut a fine edge in wood, laminates, plastics and Styrofoam insulation. (For the curved corners, we used the saw to score the back of the material so it would follow the curve of the aluminum.)

The other project we were able to get done was installing a missing window which we found a replacement for at www.vintagecampers.com. We also ordered some rubber gasket material for a front window and the Straight Tip Filler Strip Insert Tool (about $32.00) to install it. When I looked at the tool and the lock strip part of the gasket, it seemed obvious how it might work. It proved to be a little more difficult to do. I see now they recommend using silicone as a lubricant, and that would help. I used some soapy water and that worked OK too. The easiest place to start installing the lock strip was at the joint where the two ends of the gasket meet. With the strip inserted through the top of the tip of the tool you "swim" the tool through the channel in the gasket. Wiggle the tool side to side and push (slowly but firmly) through the channel. Everything is tight. Go slow, keep it lubricated and don't rush. If you hurry

the tool may pop out the channel and it is difficult to get started again. (Yes, it happened to me.) I "wiggled the tool back in to the channel using the same motion and then had to go back and fix the inch or so that had not gone in with the tool. Once I got the hang of it, the tool worked great. Where the two ends

of the lock strip met I cut it 1/4" long and forced it together tight. (If you don't, rubber can shrink and cause a gap. I'm not sure how you could install this strip without this clever tool.



HOW TO INSULATE

Don't Forget the Floors

By John Abbott
Retro R.V.s

There is no one right answer to the question of how to insulate the floor of your trailer. In some canned hams, there just is not much room. Rigid foam insulation can be glued to the underside of the floor with spray adhesive. We stay away from sprayed-in foam insulation (in the walls too). It glues everything together and makes future maintenance a bear. RetroRVs also puts on aluminum belly pans when the budget allows. It makes the biggest difference in how warm the floor stays.

RetroRVs uses mostly fiberglass batt insulation under the floors (the pink stuff). It's what Airstream used after all. When we do a shell-off floor replacement, we unroll the insulation parallel to the frame members (front to back) with the paper side up. This provides enough vapor barrier yet still lets the wood sub-floor dry out, should it get wet somehow. We then lay 3/4-inch marine plywood on top (the sub floor) and secure it to the frame with elevator bolts. You may have to pre-drill the holes, depending on the frame.

Before we install the belly pan, we cut through the fiberglass part of the insulation on each side of the frame members. This way it can "puff" down into the belly. The pink stuff is easy to get and 3-1/2 inches works out fine in a typical 4" belly space.

As for belly pan material, we use .025 5052 H32 aluminum. It is thick enough yet it bends around all the corners easily. RetroRVs convinced Airparts Inc (Airpartsinc.com) to carry this aluminum in a 48-inch wide coil. Order two pieces the length of your trailer plus a foot. The good folks at Airparts will coil it up and ship it to you in a box (or two) via FedEx. This lets you put on the belly pan from front to back in a single piece with just one seam down the middle of your trailer. Secure the belly pan with large flange 3/16th-inch blind aluminum rivets (Vintage Trailer Supply has them) to the frame. Don't use any sealant on the belly pan because if water gets in there, you want it to be able to drain out.

Here's a trick that will save you a lot of time. Make a replica of the front frame of your trailer out of 2x4s and screw them to a scrap piece of plywood cut to match the curve of the sub-floor. You now have a jig to fashion the front of your belly pan (without lying on your back under your trailer). Place the front of the belly pan on top of the jig and anchor it with a couple of screws. Now make all the cuts and bends to fit the front of your trailer. Then when you drag in under your trailer, it will be ready to fit into place.

Do the same for the back if needed (but if you do this you will need a seam across the belly pan towards the back of the frame). Be sure to put the back piece of the belly pan on first so the seam will face backwards.

If you do a really good job of fitting the belly pan on nice and tight, you may want to consider drilling a few drain holes in it. Should water get into the belly pan, remember you want a way for it to drain out! With all the time and love you are putting into it, you'll want your restoration project to last another 50 years.

LAMINATING THE TOP

The basic steps to laminating your own counter-tops. A simple do-it-yourself project with basic tools and a router.

1. Apply the adhesive on the laminate first, substrate second using your adhesive roller. The laminate is a non-porous product, it will only dry from one side, the substrate is a porous product, it will absorb and flash into the top as well. It will dry faster. Two thin coats on the surface are better than one heavy coat. One hundred percent adhesive coverage is required (each coat). Before applying a second coat, make sure that the first coat is dry. Allow adhesive on both components to dry.

2. Position the dowel rods on the top substrate surface approximately 12" apart, perpendicular to the front edge. Position the laminate carefully over the substrate. Starting at one end of the counter, start removing the dowels one at a time while holding the laminate in place.

3. Use a rubber 3" J-roller to apply uniform pressure across the entire countertop (see photo H). Apply pressure to every inch of the surface for a complete and lasting bond.
4. Route off the laminate overhangs with the router and flush trim bit For inside corners, like sinks, start the routing process by drilling 1/8" or greater holes in each corner. Use each corner as the starting point for the jigsaw process. The radius left by the routing process in any inside corner should remain.
5. Clean off excess adhesive with Acetone and a clean white cloth.
6. Areas that cannot be routed may be filed smooth. Cutouts for sinks may be made with a jigsaw and a fine tooth blade. Holes for faucets may be made with a hole saw. A radius on an inside corner (minimum 1/8") will strengthen the corner.

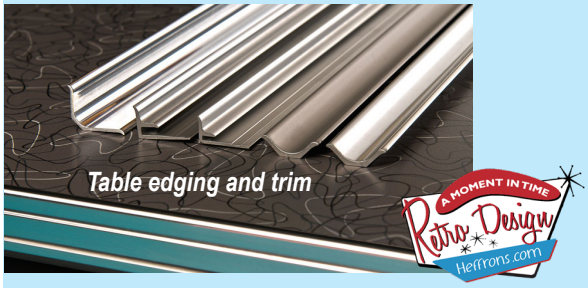
Images used with permission from Woodworker's Journal/Rockler Press, woodworkersjournal.com

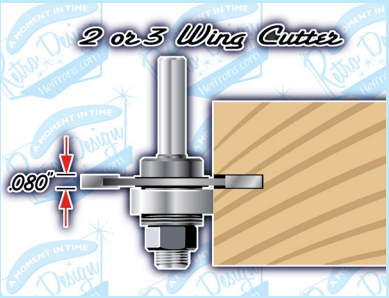
FINISHING THE EDGE

When purchasing metal banding or table edge make sure you have the correct size needed for your counter-top. The counter-top thickness will dictate the size of banding you need. Take into consideration the laminate thickness added to the wood when determining your banding. When working in campers, the counter-top doesn't always allow for any overhang from the bottom of the metal banding to the top of the first drawer. Most people realize this after the installation. Make sure whatever thickness the drawers are they will clear the bottom of the metal banding.

Table edge can be polished (bright) or satin finished. It may be pre-drilled or smooth faced. It can be fluted or smooth.

Most table edge molding is held on with twist nail or small screws. Any cuts in the aluminum trim should be done with a fine tooth blade to minimize jagged edges. A fine metal file can be used to eliminate sharp edges.





If you do not want to see fasteners you may choose a metal banding with a friction fit T-lip on the back for a friction fitted installation. You will need to cut a corresponding groove in the wood for the friction T-lip to fit into.

For this, you'll need a 2 or 3 wing .080 cutter bit, with a ¼"shank. The lip depth on the back of the banding can vary. Please don't make any cuts in the wood until you have the metal banding on hand. Make sure the guard is set where the cut isn't too deep. If the cut is too deep you will have a loose banding. This isn't to scare you, it's just to make you aware that it's always best to measure twice and cut once. You can always go in deeper if needed later.

Using a banding profile with the friction fit T-lip, you'll also need to notch the back to accommodate any radius down to 3". This can be done with a wheel type hand grinder or jigsaw with a fine metal blade.

Heffron's A Moment in Time Retro Design has a large selection of table edge and T-Lip trim. www.heffrons.com

www.TrailerfestRally.com

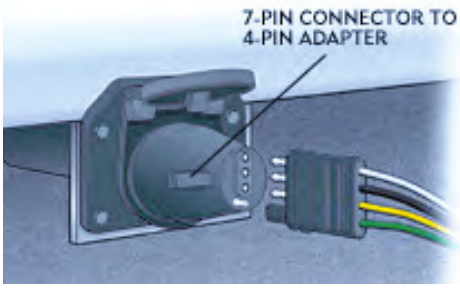
Rick Tip: *One way to check the correct size hitch ball for the coupler is to secure the trailer coupler to the hitch ball on the tow vehicle and raise the trailer tongue jack. You should notice the back of the tow vehicle starting to rise as you raise the tongue jack. If the coupler does not fit over the hitch ball or if it does not stay attached to the hitch ball when you raise the tongue jack it is the wrong size ball.*

Proper Hitch Work

The size, weight and configuration are all factors in determining the required hitch components to safely tow the trailer. There are lightweight trailers, heavy trailers, single axle trailers and tandem axle trailers. Larger, heavier trailers have more tongue weight and require additional **weight distributing hitch** and **sway control components** to safely tow the trailer. Smaller, lighter single axle trailers don't always require weight distributing hitch components, but they can be prone to trailer sway and should have some type of trailer sway control mechanism. You want the trailer to sit as level as possible when the trailer is attached to the tow vehicle. This is why it's important to have a ball mount with the correct rise or drop to level the trailer and tow vehicle as much as possible. On larger, heavier trailers if you connect the trailer to the tow vehicle and the lowest point is where the trailer couples to the truck you need additional weight distributing hitch components, and you should not transport the trailer without these components. Trailer sway is another concern you should be aware of, improper tongue weight, hitch components, crosswinds, passing vehicles and more may contribute to trailer sway. There is always the risk of trailer sway when transporting a trailer.

Trailer Lights:

When a trailer sits for long periods of time some or all of the trailer lights may not work. The trailer plug receptacle on a newer tow vehicle (7-pin) may not be compatible with the light cord plug on the vintage trailer (possibly a 4-pin = lights only, no brakes). You can purchase adapters that go from a 4-way to a 7-way plug. There could be many reasons why the running lights may not work:

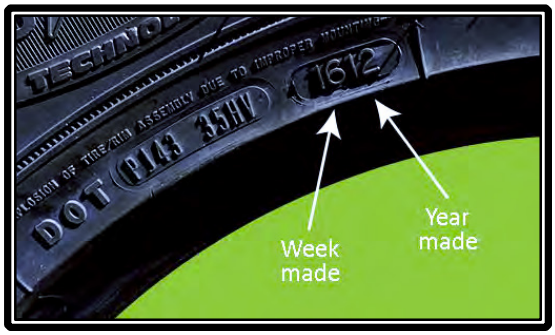


- There could be a problem with the wiring just because it is OLD.
- Mice and other rodents may have chewed and damaged the wiring.
- It could be that a bulb went bad or there may be a poor connection between the bulb and the socket.
- The ground at the light itself may be corroded or rusty.

Trailer Tires

Tires on a vintage trailer are a big concern. Trailers that are not towed often may not show significant tire wear. Old tires, even with good tread left, can result in tire failure. The tires may look fine on the outside, but have internal damage you can't see. Exposure to the elements can cause cracking or checking on the tire sidewall. Visually check the outside and inside sidewalls of each tire, look deep into the tread of the tire for cracks also. **If you see small hairline cracks in the sidewalls or tread, the tire should not be trusted to transport the trailer.** A blowout on the way home can be difficult to handle and can do lots of damage to the trailer. Trailer tires take a real beating and are most likely to fail when loads are heavy, temperatures are high, and the tire pressure isn't correct.

Check the age of your tires! Check the DOT (Dept. of Transportation) code to see when the tires were produced. EXAMPLE: "1612" = 16th week of 2012. If the trailer's tires are more than 3-5 years old, you may want to consider replacing them.



Vintage CAMPER TRAILERS

PO Box 354, Elverta CA 95626