

RV Maintenance & Tips Round Table Discussion

Kentucky Good Sam Spring Rally

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Brandenburg, KY

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Electrical Basics for Reference

- 30Amp vs 50Amp Discussion (Basic Electricity)

E= Volts /Voltage

I= Current or Amperage or Amps

R= Resistance in Ohms

P= Watts/Wattage or power consumption of device in watts

Remember Pie that we eat --- $P=I \times E$ or $P=I \times E$

$P=I \times E$

$I=P/E$

$E=P/I$

$P=E^2/R$

$P=I^2 \times R$

$E=I \times R$

$R=E/I$

$I=E/R$

Examples:

1. How many watts (P) can a 30A and 50A service provide? (Assuming 120Volts)
 1. You know current (30A) and Voltage (120V) so
 $P=I \times E$ so $30(I) \times 120(E) = 3,600$ Watts.
 2. You know current (50A) and Voltage (120V) so
 $P=I \times E$ so $50(I) \times 120(E) = 6,000$ Watts.
2. My Motorhome has an 8,000 watt generator. How many Amps of current can it deliver?
 1. You know watts(P) 8000 and Voltage(E) 120
 $I=P/E$ so $8000(P)/120(E) = 66.67$ Amp.
3. My RV has 30A (or 50A) service. What size external generator (watts) do I need to provide at least 30A (or 50A)?
 1. You know current(I) 30A and Voltage(E)120V
 $P=30 \times 120 = 3,600$ Watt Generator.
 2. $P=50 \times 120 = 6,000$ Watt Generator.
4. I replaced my hot water heater element that has 10 ohm resistance with one having 40 ohm resistance. How much current (Amps) and Wattage (P) does each one have.
 1. 10 ohm element. Current(I)=120(E)/10(R) = 12 Amps. $P=I^2 \times R=144 \times 10=1,440$ Watts.
 2. 40 ohm element. Current(I)=120(E)/40(R) = 3 Amps. $P=I^2 \times R=9 \times 40=360$ Watts.

NOTE: Significant reduction in current draw. Really important on 20A or 30A service.

Surge Protector Needed? Yes

- Motorhomes generally come equipped with a Transfer switch/Surge Protector. 5th wheel/Travel trailers generally do not.
- Internal (hard wired) or external (mounted at power pole) version work the same. Internal units are protected from weather & theft.
- Surge Protector guards against open Neutral, power surges, over & under voltages.
- Power problems will prevent campground power from reaching internal circuits.
- If power problems occur later, it will shut off internal circuitry before damaging RV appliances.
- Surge protector constantly monitors incoming power. If returns to normal, power is re-applied to RV appliances.

Winterizing RV

- Blow out Lines or use RV antifreeze (Pink Stuff)?
 - Blowing out lines requires regulated air tank (40-50psi recommended).



- Less expensive than using pink stuff.
- Perhaps a need for both methods, especially with an ice maker, clothes washer, or macerator toilet.
 - Refrigerator with water & ice maker.
 - Pink Stuff makes pink ice cubes. Takes forever to get usable ice cubes in Spring.
 - Constant air pressure. Purge Frig drinking water line with large cup.
 - Constant air pressure for a couple days forces all water out of line going to ice maker. Done when cubes are smaller and no more cubes.

Winterizing RV (Cont)

- Blow out Lines or use RV antifreeze (Pink Stuff)?
 - Clothes Washer.
 - Hot & cold water lines behind wall. Generally no way to drain.
 - Force warm water wash with constant air pressure to purge water lines going to washer.
 - Do a spin cycle to get this small amount of water from tub.
 - Put quart or so of pink stuff in tub then another spin cycle to get pink stuff in discharge line.
 - Macerator Toilet.
 - Constant air pressure – flush several times to purge water line to toilet.
 - Pour ½ gallon or so pink stuff in toilet bowl. Flush. This replaces water in 1” drain line with pink stuff.
 - Pour ½ gallon pink stuff in bowl for winter (probably not necessary)?

Clean Hot Water Tank

- Drain Tank if RV is not being used for extended timeframe
- Flush Tank Periodically. Helps Prolong Life of Tank
 - Do at least once a year, especially at year end before or after winterizing or being exposed to bad water.
 - Hot water can get a bad odor if tank not cleaned.
 - Use water flushing tool, inexpensively obtained at RV supply facilities. Remove drain plug (Anode Rod) & flush debris from bottom of tank until water runs clear.



Clean Hot Water Tank (Cont)

- Flush Tank Periodically. Helps Prolong Life of Tank
 - After flushing tank, especially during winterizing, and before putting HWH in bypass mode, purge residual water from bottom of tank. (optional step).
 - Not entirely necessary because water can freeze and expand without harming tank.
 - Constant air pressure with all other water lines closed.
 - Place thumb over HWH drain plug. Air pressure will build.
 - In a few seconds remove thumb and water will spew out several feet.
 - Repeat several times to remove as much water as desired.
 - Leave drain plug out for winter but put paper towel in hole so tank can breathe and also keep bugs out of tank.

Replace HWH heating element

- Replace with Smaller wattage element.
 - Pros:
 - Exact physical fit, but only pulls 3 Amp current verses 12 Amp with OEM heater.
 - Made for 220V applications, but we are only using 120V in our RV.
 - Excellent when on 30A or other limited power service. Very small current draw.
 - Have original heater as a backup in case new one fails
 - Low cost, about \$20 online, at least for Suburban Hot Water Heater.
 - Cons:
 - 50 minutes to heat water vs. 20 minutes with OEM heater.
 - If you don't conserve hot water usage, you may have to occasionally turn on gas to speed warming. Yes, you can run HWH on both electric & propane simultaneously.
 - Advise to keep wrench and original heating element in your RV.



Gray Water Smell at Sinks

- Newer RV's may not vent sinks to roof. Many use under counter vents called Air Admittance Valves (AAV), or Auto Vents (AV). Much less costly than full pipe to roof vents.



- OEM version are very inexpensive, about \$3 to \$5 each, and are prone to failure.
- Typically fail to close vent after sink drains, permitting gray tank smell into RV.

Solution: Replace them with new ones from big box stores, about \$20 to \$25 each.

Other Causes:

- Water conservation frequently required in RV doesn't provide enough flow to keep gunk from building up in under sink plumbing.

Gray Water Smell at Sinks (Cont)

- HEPvO pipes are now being used in RV's to replace Pee Traps.

Pros:

- Less space under counter compared to Pee Trap.
- No need to winterize since there's no standing water.
- No need to vent under sink.
- Can be mounted horizontally or vertically.

Cons:

- Flapper valve at end can stop closing fully, allowing sewer gas to flow back into sink.
- Water conservation permits gunk to build up in HEPvO, requiring periodic disassembly/cleaning.



Gray Water Smell at Sinks (Cont)

- HEPvO pipes are now being used in RV's to replace Pee Traps.

Cons:

- Even if not conserving water, it naturally flows slower in HEPvO because of diaphragm opening.
 - Flapper valve at end can stop closing fully, allowing sewer gas to flow back into sink.
 - NEVER run a plumbing snake down drain as it will ruin HEPvO valve.
 - Did I mention periodic cleaning? You MUST remove piping to clean properly. No Snake.
- Summary of smells above or under sinks.
 - Smell under sink
 - Pee Trap installed with Defective AAV.
 - Good AAV can allow slight smell under sink as water flows to gray tank.
 - Smell above or at sink area
 - HEPvO type drain being used. (No other vent under sink).
 - Piping and AAV clogged with gunk. Need cleaning.
 - AAV flapper not fully closing.



Group Discussion

- Let's share personal experiences of problems/resolutions to help each other.
- Do you have a perplexing problem not yet fixed? Maybe someone can solve it!
- Don't be embarrassed to discuss your flubs. We have ALL made silly mistakes that we never want to repeat.
- Let's have some fun with this discussion.
- I'll start with my Austin, TX antenna thief story.