DEAR NEW GMC MOTORHOME OWNER:

Congratulations on the purchase of your new GMC Motorhome. It will provide many years of enjoyment.

We have provided you with a complimentary copy of "Take Care" to aid you in the maintenance of it's toilet and water system. This booklet contains many handy tips on such procedures as charging the toilet, off season storage and winter protection.

Your new motorhome has been winter-proofed with Winter-Pruf "D" sanitizing RV Antifreeze. Before using your water system flush the entire water system thoroughly until all traces of color has disappeared. Then your water system will be sanitary and ready for use.

We have also provided for you a free sample of "Travel-Jon" Deodorant. We feel this is the most effective deodorant/cleaner available.

Enjoy many years of fine recreation.

John Sweet

$1.00

Take Care

A Complete Guide to the Maintenance of Your RV Toilet and Potable Water System

CONTENTS

* TRAVEL-JON and ® WINTER-PRUF are registered trademarks of Century Chemical.

INTRODUCTION

This Owner's Manual has been prepared by Century Chemical to promote better understanding of the proper use and maintenance of toilets, holding tanks and water systems used in recreational vehicles and pleasure boats. It was written by Jerry Copeland, free lance author.

Please read the booklet all the way through. You will find the type of toilet and system described that you have in your own RV or boat, along with suggestions and instructions that will aid you in keeping it operating properly, and free from unpleasant odors.

For years before RV travel and boating with toilets became popular with the public, buses, trains and airplanes were equipped with toilets and holding tanks. This is when we first became involved with the problems that are associated with them, and we are proud to say that we are now the world's largest producer of portable sanitation deodorants!!

We invite you to read on, and benefit by our years of experience . . . . .

By: John Sweet

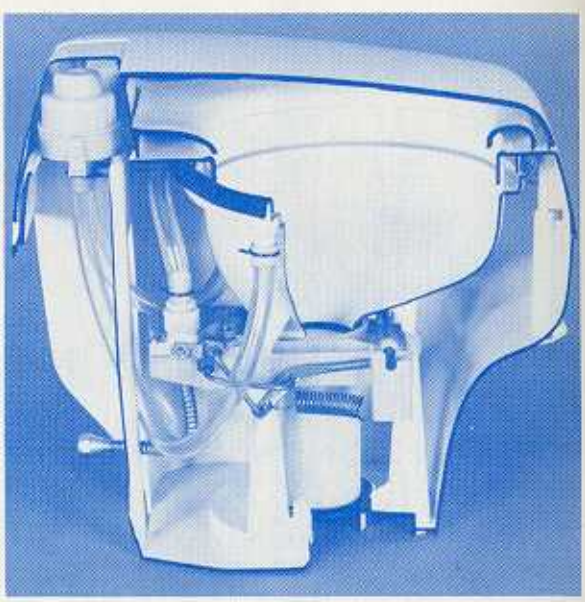
Jerry Copeland, author, has been a camping enthusiast most of his life. He and his family purchased their first RV in the early 60's but were formerly tent campers. Nine years ago Jerry decided to pursue a full time career of writing for RV Magazines after being an employee of Bell Telephone Systems for 22 years.

Travel Toilets, Holding Tanks, and Drain Systems:

Travel toilets are those which are used in connection with transportation. While the general classification will also apply to airplanes and buses, we are concerned here with the toilets used in recreational vehicles and boats.

Although there are a dozen or so brands on the market, and they may seem to be quite different, travel toilets fall into two general categories . . . fresh water and recirculating. These descriptions are based on their system of flushing away the wastes. The fresh water type uses fresh water from the RV water supply tank, or its own built-in tank, each time it is flushed. The recirculating toilets use a measured quantity of water (usually 3 or 4 gallons), which is poured into the bowl as an initial charge. They are flushed electrically with a built-in pump that recirculates the charge water and the wastes that have been added, for their flushing principle. A recirculating toilet has the capacity to hold up to seven or eight gallons; that is, waste plus the initial charge, then it will be necessary to empty and recharge it.

Fresh Water Toilets:



There are three basic types of fresh water toilets. The portable kind is very popular with tent campers, small coaches, and boats. Each of them are built in two sections. The upper section includes the seat cover, bowl, and a tank holding fresh water for flushing. The lower section, which is held to the top with clips, is the holding tank. The lower section can be removed so that the holding tank can be transported by its built-in handle and poured into any regular toilet for disposal. Use of these toilets is very dependable and popular. Attention should be paid as they near the point of fullness because the holding tank will fill up and overflow without warning. Typical of these are Thetfords Port a-Potti – two ounces of TRAVEL-JON in the tank will make this fine toilet work even better.

The most common fresh water toilet used in RVs is often called a marine toilet, which is a misnomer. The marine toilet used popularly in boats, before we became concerned about polluting our waterways, is almost completely out of existence. Its action was operated either by the movement of the boat through the water, or by an electric pump. Water constantly ran into the top of the bowl and out the open bottom, carrying wastes out to the environment and contributing to the pollution problems.

Toilets became popular for recreational vehicles in the early sixties, and they were the same types that had formerly been installed in boats. However, they were modified so that a valve was installed on the bottom to close them, and they operated on an individual flush basis. Since that time, new toilets have been developed and manufactured, and these are the types presently used in both RVs and boats.

The most widely used fresh water toilets are the Thetford Aqua Magic, Monogram Classic, Malibu by PAR, and the Mansfield Traveler. The latter has a viterous china bowl, while the others are made of plastic materials. They will usually have a polypropylene bowl, and the outside housings constructed of ABS plastic.

These toilets are all designed to be stylish looking and are made in various colors to match any decor. However, the research and engineering that goes into them should not be overlooked. They are developed after many hours of testing in each company's complete laboratory. Even splash patterns are studied to determine the best configurations and shapes for the bowls.

Immediately below the toilet, underneath the floor will be a holding tank. All wastes plus the flush water accumulates in the tank until it can be transferred to a disposal station, at a later time. Careful use of flush water is indicated because it can both deplete the water supply and fill the holding tank unnecessarily. Before use, a small amount of water run into the bowl by depressing the flush pedal quickly will wet its interior and flush cleaner after use with less water. Toilet paper placed in the bowl before use will eliminate staining the bowl and facilitate easier flushing.

The space saver module type toilet is also a fresh water type. The toilet seat and bowl folds into the wall, providing more space in the bathroom for showers and using the sink.

Recirculating Toilets:

Recirculating toilets are not connected to the vehicle's water system, but do require an electrical connection for 12 volts DC. They must be charged with chemicals before they can be put into service, but do not need further charging until after they are emptied. To flush, a button or switch is pushed to operate the built-in pump. This pump recirculates the charge, plus the waste that is added through a filter, to rinse the bowl. All waste is stored in the unit itself and when the liquid level has increased until it can be seen in the bottom of the bowl between flushings, it is time to empty.

If the vehicle is equipped with a holding tank, the toilet can be emptied into it, rinsed, and recharged again. If not, it will be necessary to go to a disposal station. The most popular recirculators are the Thetford Electra Magic, Monogram's Monomatic, and the Jensen 747. On the bottom of the Monomatic is a decorative skirt. When this is removed, a valve will be seen that will empty the contents of the toilet. Two retainer clips hold the handle so that it cannot be pulled accidently. The Electra Magic and Jensen valves are accessible without any panel removal.

With all recirculating toilets, the electric pump is the most likely source of trouble. Do not push the button that operates the flush cycle when the toilet is empty, or until all charging water has been added, as dry operation can be harmful to the pump.

To clear a clogged pump there will be two wires running to the pump, and reversing the connections will reverse the operation of the pump. This may clear a clogged pump, but if not, the complete assembly can be removed from the top of the unit for cleaning. It may be necessary to disassemble it for a thorough job. The newest Monomatics are built to reverse the electrical flow with each operation of the pump for self-cleaning. The Electra-Magic has the entire pump mechanism shielded by a screen guard. Paper and solids cannot reach the pump mechanism.

If the pump has become inoperative, be sure to check for a blown fuse or tripped circuit breaker before restarting it. The rinse cycle between emptying and recharging is a good time to clean the pump action. Several operations with the fresh water will help.

Charging a Recirculating Toilet:

All of the recirculators are charged in the same manner, varying

only in the amount of water required. The Electra Magic and the regular size Monomatic have the largest capacities and will hold four gallons of waste, in addition to the charge. The Monomatic Jr. and the Jensen 747 are about 2/3 as large. Listed below are the charge capacities for each unit. It is a good idea to measure the water before pouring into the toilet. Too little charge water can cause inadequate flushing, and too much reduces waste capacity.

Monomatic (regular)	4 gallons
Electra Magic	3 gallons
Monomatic Jr.	3 gallons
Jensen 747	3½ gallons

After all of the charge water has been poured into the bowl, add the proper amount of chemical deodorant and operate the pump for several cycles to mix it thoroughly. The toilet is now ready for use.

The Monomatic

Variations:

Monogram Industries has recently introduced a new recirculating toilet that they believe will have special interest to the boating public. It requires no electrical connections . . . pressing the foot

pedel provides the power to operate the pump. Monogram also has a unit called the Monomatic Twin that operates as a recirculator while traveling, and movement of a lever transforms it into a fresh water toilet flush when you are parked in a campground where water and sewer hookups are available.

Monomatic Twin

Holding Tanks:

Holding tanks are made of either fiberglass or ABS plastic and have a capacity of up to 40 gallons, or even larger. In RVs, they are installed below the floor and will be lower than any of the drains. A slide valve and a termination to accommodate a 3-inch drain hose is provided for evacuation of the tank.

Holding tank systems for recreational vehicles fall into three general types; the by-pass system, the single tank system and the two tank system.

Most common is the by-pass system. This system uses one holding tank which is connected to the toilet only, to catch all body wastes. All other drains are by-passed . . .that is the kitchen sink, lavatory, and shower pan drains go directly to another outlet near the holding tank discharge valve on the outside of the coach. This outlet will have a cap on it that must be removed and either connected to a sewer line or a receptacle placed under it to catch the drain water.

Holding tanks with the by-pass system will run from 12 to 20 gallons in capacity. The large drain pipe will hold a certain quantity of drain water even with the cap on the outlet. Seeing the water run down the kitchen sink drain can therefore be misleading. The reason that the sink drains is that it is high above the outlet. After the

complete drain pipe fills, water will back up into the shower pan through its drain which is much lower than the kitchen sink.

The second type of holding tank system is a single tank connected to all drains. This is usually a larger tank, sometimes as much as 40 gallons in capacity.

Some manufacturers vary this sytem by having the lavatory and shower pan by-passed, but will have the kitchen sink drain into the large tank along with the toilet.

The third system is the most desirable and is gained in popularity as we are all becoming ecology minded. It is a two tank system. It provides one tank of about 20 gallons connected to the toilet for human wastes, and a separate tank of about the same capacity for all the sink wastes from the kitchen, bathroom and shower pan.

Usually both holding tanks will have one common outlet for disposal. This is done by connecting the two tanks together with two slide valves and the drain outlet between them. Either tank can be drained independently by opening its own slide valve. Some RVs have a separate outlet on each tank because space did not permit them to install the tanks close to each other. When parked in a campground that has full hookups, the three inch sewer hose can be connected to the park drain and the sink drain valve can be left open. However, the sanitary tank slide valve should be kept closed to prevent all liquids from running out of the tank, while the solids remain in the tank and dry out. If the slide valve is opened every few days and then closed again, a flushing action brought on by the rapid discharge of the contents, will help to cleanse the tank thoroughly.

Holding tanks in boats are often a greater problem because of space limitations. Where possible, they will be placed underneath the toilet, with a hand pump built into the connecting line to transfer the waste from the toilet.

Boat holding tanks are evacuated from the top, and will have a fitting for this purpose. Marinas are now equipped with pumping facilities so that pollution problems from watercraft can be eliminated completely.

Holding Tank Evacuation:

Sanitary holding tanks should be emptied only at an approved disposal station. Do not empty the tank in an open sewer or ditch.

Sanitary disposal stations are so plentiful now that you can usually take your choice of which one you want to use. Many gasoline stations have them, especially on the freeways. They are often pointed out on billboards that can be seen as you drive, as well as signs at the front of the station itself. In many state and national parks and even some rest areas along the freeway, you can find them. If you cannot locate one at any of the above places, try a large RV dealer in a nearby town, or mobile home park that displays a sign for overnight stops. Most states now designate when there is a campground near a specific exit along the road, and these will always have a dumping station that you can use for a small fee.

There are many directories available that list sanitary stations. They are published by oil companies, RV magazines, campground directories, and even insurance companies.

Pull the vehicle into the disposal area, stopping so that the holding tank discharge valve is close to the sewer opening.

There are many types of plastic hose connections and the proper one for your rig will be included in the equipment that came from the coach manufacturer. Fasten the hose to the connector securely with a large hose clamp. This is essential as the force of the water running from the tank can pull the hose off the connector.

Place the other end of the sewer hose in the station receptacle. It should be held firmly in place when the tank valve is opened as it too, could pop out from the force of the flow.

After the tank has emptied, close the valve and rinse the toilet and holding tank with several gallons of water, or even a full tank. Then allow the rinse water to run out. Close the valve again and disconnect the hose from the coach. Pour more water through the hose to rinse it and return the hose to its carrying holder. Wash down the ground around the sewer.

Avoiding Holding Tank Problems:

Toilet tissue can cause a lot of problems with your toilet or drain system. In fact, it is probably the biggest offender. Most of these troubles can be avoided by the simple adoption of a few preventive maintenance practices.

Using the proper tissue is very important. Do not use facial tissue types, even though they come in pretty colors and are advertised as 'super soft'. Most RV dealers sell a tissue that is made especially for

travel toilets. It is expensive, but is suitable because it is designed to break down and disintegrate by movement in a liquid, such as within a recirculating toilet or the vehicle's holding tank.

You can also obtain satisfactory results with regular white tissues . . . the same products that our mothers bought before us which we call common 'toilet paper'. Here is another instance where the newest is not always the best.

Toilet tissue should be used conservatively. That is, there is no need to use less than is needed, but it should be remembered that using more than enough can only contribute toward troubles or clogs later on. It is important that when the holding tank is evacuated, that a large amount of liquid be allowed to run out rapidly so that all papers and solids are completely flushed away. It is a wise practice to fill the tank with water before emptying to aid this process. This will prevent tissue from being caught in the slide valve, making it impossible to close.

Be sure that your toilet is not used by your family as a waste basket. Do not throw cigarette butts, facial tissues, disposal diapers, sanitary napkins or other objects into the toilet. Such things cannot be broken down or liquified and will end up causing future trouble.

Odor Control:

The transfer system for toilet wastes is our best solution for reducing pollution. Collecting wastes in a holding tank to transfer it to a suitable disposal point will protect our streams and rivers which ultimately receive most of the chemical residue that is deposited anywhere in the environment.

Our immediate problem in RVs and boats appears to be the odors associated with the waste that we are storing and we need to have a way of controlling these odors without contributing further damage to the ecology. Therefore, the chemical products that we use *must be* biodegradable, so that they will become completely used up in the process of doing the job that we put them to.

For example, we know that phosphates in the detergents that we use at home are very effective in adding cleaning power to the detergents. However, it has been found that too large a portion of the phosphates remain in the water even after it has passed through our modern sanitation systems, and has presented a major health hazard. We now have detergents with little or no phosphates in them.

There are many chemical products that are made for use as deodorants for holding tanks, and they come in just about every conceivable form . . . liquids, powders, capsules, tablets, and granules. The ingredients used are as variable as the shapes and some of them are not biodegradable.

A common, inexpensive solution to the problem of odor control is the use of metallic salts - such as zinc sulfite. Unfortunately, these salts kill the bacteria so effectively that they don't stop when they reach the treatment plant. These products have been banned from the market in many areas of the country and most manufacturers have discontinued the use of them.

Today's environmentalists sometimes seem to ignore the problem of waste control. However, recently a major consumer magazine made the following statement after studying the problem: "Of the three types of bacteriostats used in chemical toilets, formaldehyde is definitely biodegradable, at least in low concentrations, and thus is the bacteriostat of choice, in our opinion. Zinc salts are definitely not biodegradable; their introduction in large quantities into a sewage system could put it out of commission until the resulting zinc deposits had been physically cleaned away. Less is known about the effects of quaternary-ammonium salt bacteriostats on sewage systems; they appear to be less desirable than formaldehyde and more desirable than zinc salts."

"We recommend, therefore, that people use formaldehyde bacteriostats - "wherever possible" in recognition of the facts that a small proportion of the population is sensitive to formaldehyde. Typical reactive symptoms are sneezing, tearing of the eyes, and a touch of skin irritation. We know of no serious effects."

However, even formaldehyde must be combined with other ingredients, as formaldehyde by itself has an odor more offensive than the waste odors that it is used to control. Here at Century Chemical we have had over thirty years of experience working in this area.

Eleven years ago we developed TRAVEL-JON deodorant and placed in on the market. It is based on the formulas we developed in 1937 when toilets became popular in the airline industry. Since that time our deodorants have become the most widely used product in the world for control of waste odors in portable sanitation facilities. Our regular customers include four out of five of the largest

airlines in the United States, bus companies, trains, and some of the largest construction site sanitation companies. We are also proud to report that we supply many thousands of individual owners of recreational vehicles and boats. In other words, we are THE WORLD'S LARGEST PRODUCER OF PORTABLE SANITATION DEODORANTS!!!

We invite you to check the label on a bottle of TRAVEL-JON, and suggest that you do the same with any product that you might consider using. You will see that TRAVEL-JON contains formaldehyde, and is biodegradable. TRAVEL-JON is also highly concentrated and works in all RV and boat toilets. You might note that some labels even say that the product you are buying is 75% water - thats why you often use four times as much of other chemicals as you do with TRAVEL-JON.

Before You Leave:

Before you leave on your next outing with your boat or recreational vehicle, here are some handy tips to help you achieve the most pleasant results.

Start with a completely clean unit. Wash the toilet both inside and out, then rinse it thoroughly and rinse the holding tank. The best method is to leave the slide valve closed and fill the tank up, through the toilet. After emptying it out, close the slide valve again and add from two to five gallons of water, or enough to make two to three inches of depth in the tank. Add two ounces of TRAVEL-JON and run the vehicle for several miles. The sloshing action inside the tank will clean it. Return home, then empty it and rinse again.

The holding tank should not remain dry during periods of idleness, except during the season when the temperature can fall below freezing. The drying out process can cause scaling on the inside of the tank and this is difficult to remove. To avoid this, pour about two gallons of water through the toilet into the holding tank, or enough to cover the bottom of the tank with one or two inches of water. Add two

ounces of TRAVEL-JON and leave it stand until you are ready for your next outing.

The above procedure is called "charging the tank" and should be done on all holding tanks before they are put in use. It should be noted that this procedure applies to sanitary holding tanks whether used with fresh water or recirculating toilets.

While on Your Trip:

Your holding tanks are already charged. In order to freshen up the solution inside, add two more ounces of TRAVEL-JON to the tank. Thereafter, the addition of approximately one ounce of TRAVEL-JON every other day will keep the toilet free of unpleasant odors. The interval and amount can vary depending on the number of users, and the temperature. In the hottest weather, you may find it necessary to add an ounce daily.

TRAVEL-JON can also be used effectively in recirculating toilets. Add two ounces to the manufacturer's suggested amount of charge water, then operate the flush mechanism several times.

Remember, after evacuating the holding tank at a sanitary disposal station, to recharge the tank after it has been given a good rinse.

Earlier, you were cautioned to be careful in flushing the toilet so that you did not deplete the water supply or fill the holding tank unnecessarily. While we feel that this is good advise, we find that some campers take it too literally. If too small an amount of flush water is used, then the odor control problem becomes greater. The more that the sewage inside the holding tank is diluted, the easier it will be to kill the odors.

If you are traveling so that you will be staying at campgrounds almost every night, you will have no problem in replenishing the water supply, or evacuating the holding tank. So, while we are still suggesting that you conserve water when necessary, we want to point out that you should regulate your habits to match your travel conditions.

Sewer Gases:

It is possible that you have experienced a very bad odor, especially in the bathroom while parked in a campground with full hookups. This is undoubtedly sewer gas coming from the park owner's sewer

lines, and can be avoided easily.

Just like your home, your RV is built to the standards of prevailing plumbing codes. At the kitchen and lavatory sinks, as well as the shower pan, there are built-in traps. These are merely double elbow arrangements or goosenecks, that traps some of the water that runs down the drain. That water continues to lay in the low end of the trap and blocks any sewer gases that could be coming back from the drain lines. There is also a vent that goes up to the roof of the RV to help pass any gases to the atmosphere.

However, holding tanks are vented but not trapped, and sewer gases can pass from the sewer line back through your sewer hose, into the holding tank and up through the toilet into the bathroom. You will get the odor when you flush the toilet, or if the lower valve does not seal.

To avoid this, when hooking up your sewer hose to the park line, run your sewer hose so that it forms its own trap. The easiest way is to let it drop down from the slide valve enough so that a portion of the hose is lower than the rest of it that runs to the park connection. This is very easy to accomplish with a couple of wood blocks, or one of the hose racks that are sold for sewer hoses.

It will also help if you check the bottom valve on the toilet itself. If a cup or two of water always stays in the bottom of the bowl after flushing, it is okay. If that last bit always trickles down into the tank, it needs repairing.

After You Get Home:

Never put your RV or boat away for any length of time without giving the toilet and drain system a thorough cleansing. You will find that this is the best time to do this service and the "BEFORE YOU LEAVE" operations that we described before.

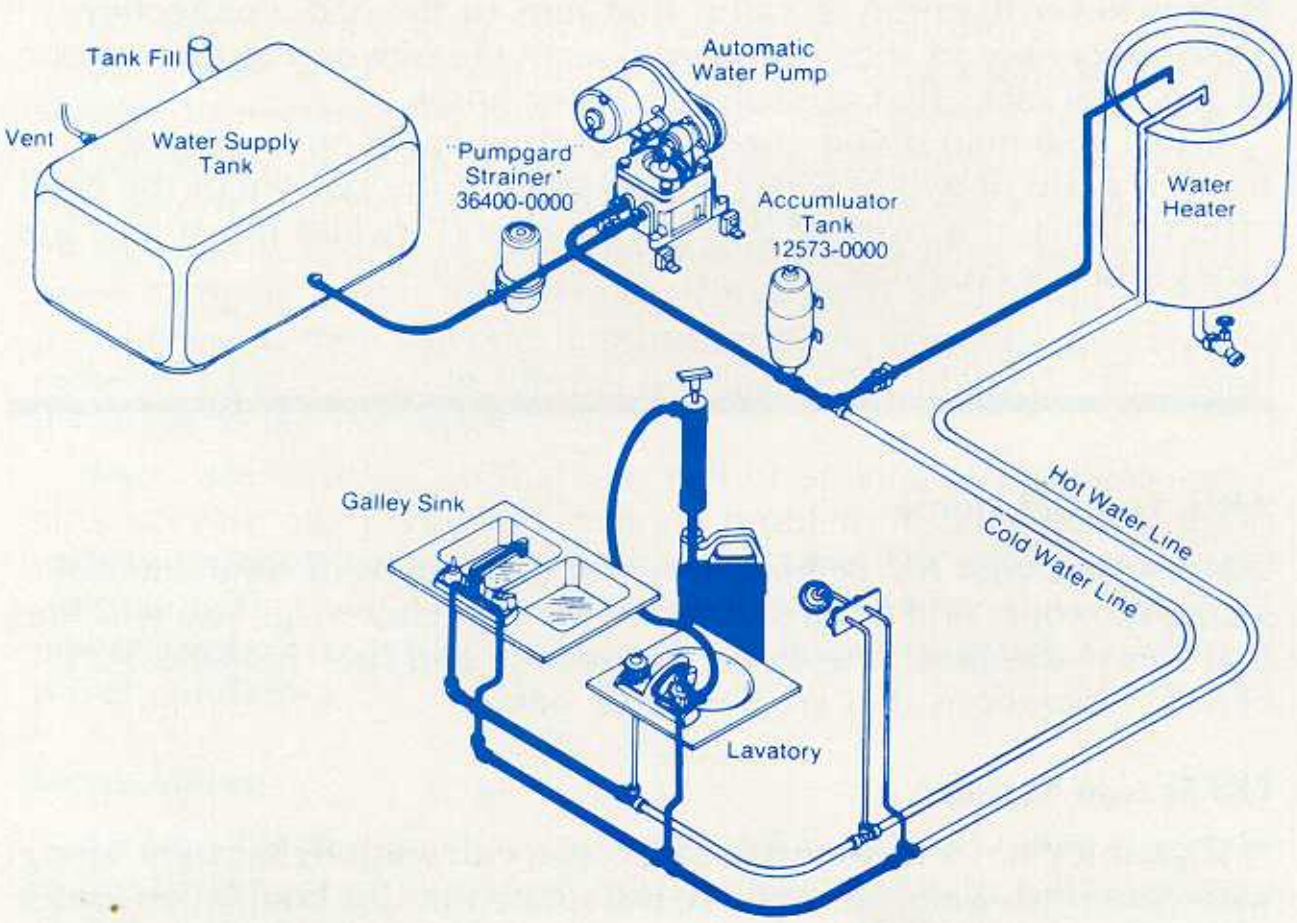
Off-Season Storage:

If your RV has a fresh water toilet, you can winterize it right along with your fresh water system. See the section in this booklet on water systems.

Water Systems:

Your fresh water system also deserves special attention, and a few minutes spent occasionally in cleaning and flushing it will pay off handsomely by keeping the water potable. Remember that a good cup of coffee has to start with good water.

Water supply tanks should be cleaned and sanitized at least once a year. As you travel around the country you may happen to fill your tank with water that tastes unpleasant to you. You can clean and sanitize it so that all traces of the unfamiliar water can be removed.



Here in the United States, we have through strict government regulations at the federal and state levels, good potable water available virtually everywhere. However, our taste buds do get accustomed to our local water and it is very possible that we can encounter some away from home that tastes unpleasant to us. This does not mean that it is impure or unhealthy, but only different from what we have become used to drinking.

There are several good water purifiers for RV installations that can be ordered as an option on many rigs, or installed by a dealer after the vehicle is purchased. They have the advantage of making the water taste the same no matter where you fill your tank.

Sanitizing Procedure:

To assure complete sanitation of your potable water systems, it is recommended that the following procedures be followed on a new system, one that has not been used for a period of time, or one that may have become contaminated:

1. Prepare a chlorine solution using one gallon of water and 1/4 cup of Chlorox or Purex household bleach (5% sodium hypochlorite solution). Pour one gallon of solution into tank for each 15 gallons of tank capacity.

2. Complete filling of tank with fresh water. Open each faucet and drain cock until all air has been released from the pipes and entire system is filled.

3. Allow to stand for three hours.

4. Drain and flush with potable fresh water.

5. To remove any excessive chlorine taste or odor which might remain, fill the tank with fresh water and allow it to stand for one hour. (NOTE: For optimum results a carbon type water purifier should be used.)

6. Drain tank and again flush with potable water.

When filling the water tank away from home, a simple precaution can be taken to kill any bacteria that might be present. Put 1/8th teaspoon of Chlorox into the tank for each five gallons of water, or in simpler terms, 1 teaspoonful to 40 gallons. This small amount will not affect the taste, but will provide the desired protection. (A water purifier will remove any trace of chlorine if so desired.)

Scale will form quicker on the inside of the water tank if it is dry. Therefore, do not drain the water tank when you return home from an outing. Instead, fill it up and let it stand until you are getting ready to leave again. Then drain it, and refill with fresh water. Of course you cannot do this if temperatures are likely to fall below freezing but it is a good method for the idle times between weekends or outings during the camping season.

Winter Protection for Your Water System:

Century Chemical Products Company introduced WINTER-PRUF several years ago for protecting fresh water systems from freeze-up during winter storage. The anti-freeze solution is poured directly into the fresh water supply tank and is run through the system to each water faucet or outlet. It has proven to be the most effective method for positive winter protection, since it actually puts anti-freeze solution in every crook and bend in the system. Previous methods of draining and blowing out lines always left a gamble that water could drain back to a low spot and freeze up, as many owners will attest to.

Using WINTER-PRUF "D" according to instructions will eliminate the springtime surprise of finding a burst water line after you thought that you had done a good job of blowing out the lines.

Now, Century is proud to introduce an improved water system anti-freeze called WINTER-PRUF "D" (E.P.A. registration No. 1560-9). It is more than just an antifreeze. This new solution contains all the protection advantages of the earlier WINTER-PRUF and contains additional sanitizing ingredients to insure that your water system and lines will be clean and potable. WINTER-PRUF "D" sanitizes the system while protecting from freezing. The seals and gaskets in the pump and valves will also be lubricated by WINTER-PRUF "D" to give them a longer trouble free life.

Use of WINTER-PRUF "D" is for water system protection during

winter storage or periods of lay-up for the coach.

THERE IS NO KNOWN COMMODITY OR PRODUCT THAT CAN BE ADDED TO FRESH WATER SYSTEMS TO INSURE FREEZE PROTECTION WHILE THE SYSTEM IS IN USE.

Many RV owners do use their rigs in the peak of the winter season, as the operation of the furnace in a well designed and built vehicle will provide ample heat to prevent freezing inside the coach itself. The holding tanks which are installed below the chassis can either not be used, as in the installations which have a recirculating toilet, or WINTER-PRUF "D" can be added to the holding tanks. If this is done, it must be remembered that you will need to add enough anti-freeze to allow for a 50% solution to have ample protection. This is a very expensive method of operation.

WARNING: Do not use Ethylene Glycol (automotive antifreeze) or Methanol (windshield washer antifreeze) in Potable Water Systems because they are harmful and may be fatal if swallowed.

Installation Instructions for Winter-Pruf "D":

To drain the water system, check your Owner's Manual for the locations of drain outlets. Open the drain cock at the bottom of the water heater tank and open the pressure relief valve at the top to allow air to enter the tank and replace the water. Open all hot and cold water faucets inside the vehicle, and do not forget the shower and toilet. Allow enough time for complete drainage.

The water heater is the most difficult part of the system to protect because of the nature of its operation. The inlet is at the bottom, and its outlet is at the top. Therefore, no water can be taken from it

unless it is full. New water is pumped into the bottom to replace what is being taken out. To protect the lines that run from it to each hot water outlet from freezing would require that it be filled to capacity with anti-freeze, or at least six gallons, and this would be quite expensive.

There are two good alternate methods. A by-pass arrangement can be installed by you or your dealer. Valves added to the pipes on the back of the unit so that closing some and opening others, will by-pass the water away from the water heater completely. It can then be drained and left open for the winter. The second method is a much simpler and less expensive process. It utilizes a hand pump to push the anti-freeze from the hot water faucets back to the heater.

We recommend a PAR Winter Protection Kit, Model 44610 which is made by ITT Jabasco and our own #721 Pump Kit. This kit includes a hand pump and a hose with fittings,

and a complete set of instructions for its use. You can purchase them at most RV dealers and once bought, the kit can be used for many seasons.

After draining, close all faucets and drain openings, except the drain on the hot water heater. Go to the hot water outlet which is furthest from the supply tank and open this faucet. Attach the pump to the faucet and insert the pump suction tube into a gallon bottle of WINTER-PRUF "D". Have someone watch at the water heater drain, and pump the solution into the line until a good green colored solution can be seen running out of the hot water heater drain. Close the faucet and repeat the process at each hot water outlet, working from the farthest toward the tank. Close all of the hot water faucets and the drain on the hot water heater. The hot water lines are now protected, and you can proceed to the cold water lines.

Pour one or two gallons of WINTER-PRUF "D" directly into the water tank. If your coach has a pressure type system, turn on the compressor for about five minutes, then turn it off. It is not necessary to build up full pressure as you need only enough to run the solution through the lines.

For a demand pump system, turn on the water pump. Open each cold water faucet in turn until the solution comes through with a good green color, then close the faucet and repeat at all other outlets. Operate the flush lever on the toilet until the green solution can be seen running into the bowl. Repeat the process for the shower. Turn off the pump or compressor.

Now the hot and cold water lines are completely protected and only the drain traps are left. Pour a cup of anti-freeze solution into each trap. There is one underneath the kitchen and lavatory sinks, and one under the shower pan. Undoubtedly, there will have been quite a bit of solution spilled during the first steps of the process, and the sink traps may not need to have any added.

In the spring when you are getting the coach ready for the new camping season, drain all the lines and water heater as before, then fill the tank and use the compressor or water pump to flush all the lines. When the green color has disappeared, your water system is ready for use and *has been completely sanitized.*

I hope that this booklet has been of help to you and if you have any further questions write to JOHN SWEET, Director of Customer Relations, CENTURY CHEMICAL, Division of Gage Products Company, P. O. BOX 1247, BERKLEY, MICHIGAN 48072.

SPECIAL TIP

If your garbage cans at home have an objectional odor, then add a few ounces of TRAVEL-JON and fill the can with water, allow to stand and rinse - your garbage can will be clean smelling for several weeks.

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