

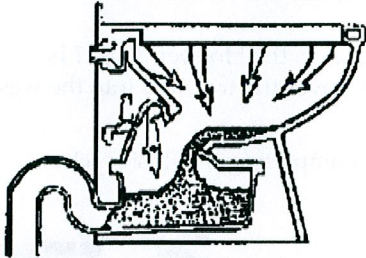
4-11 Waste System

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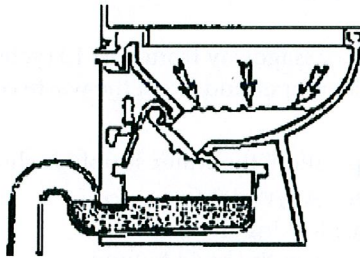
4-11.1 Air Flow Toilet

The coach comes with a Microphor Air Flow Toilet. Operation and troubleshooting tips are as follows:

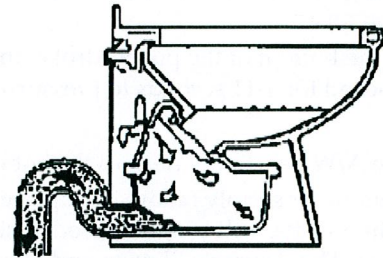
4-11.1.1 How Microflush Toilets Operate



When the flush handle is pressed the flapper opens, allowing wastewater to flow into the hopper. Clean water enters the bowl from the rim to thoroughly wash the bowl.



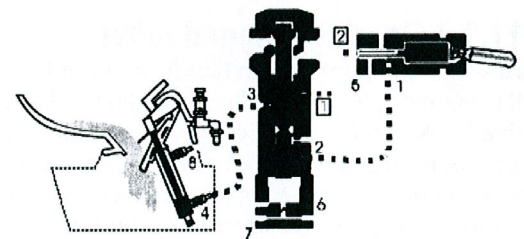
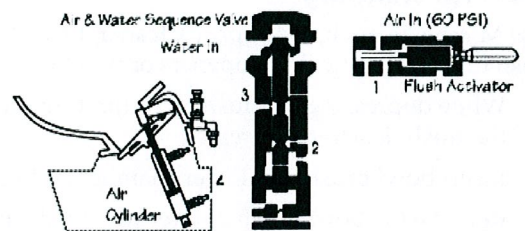
After 4-8 seconds, the flapper closes. Clean water continues to flow into the bowl, where it remains until the next flush.



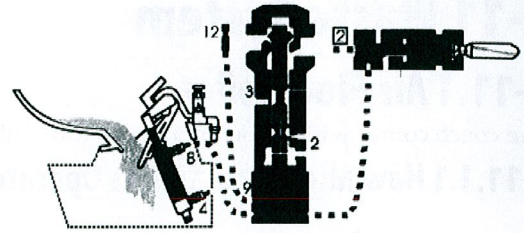
When the flapper has closed, compressed air enters the hopper, pushing the waste over the trap and into the waste line.

4-11.1.2 Air/Water Sequence Valve Operation

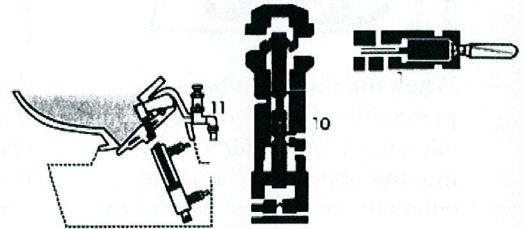
1. In the normal rest position, pressurized air enters the Flush Activator and goes from Flush Activator Port 1 (green tube) to Air/Water Sequence Valve Port 2, through Port 3 (red tube) to Air Cylinder Port 4 holding the Flapper closed, sealing the water in the bowl and maintaining a proper water surface area.
2. When the Flush Activator is pressed, air is shifted to Port 5 (blue tube) to A/W-Seq. Valve Port 6 and on to Air Cylinder Port 8 (white tube). The air in the base of the Air Cylinder is bled off through Port 4 (red tube) to Port 3 and out Vent [1], allowing the Air Cylinder to retract, opening the Flapper. Simultaneously, pressurized air in the base of the A/W Seq. valve pushes the piston and spool assembly up to open the water passage, allowing water to enter and rinse the bowl. The air on the top of the piston is bled off through Port 1 and out Vent [2].



3. As the Flush Lever is released, the Flush Activator returns to the normal rest position redirecting pressurized air to Port 2, Port 3 and Port 4. The Bleed-Off Plug [12] bleeds off the air (black tube) under the piston, causing the spool to move downward, gradually closing the water passageway. The air having been bled off the top of the Air Cylinder Port 8 (white tube) through the end of the Flush Activator Vent [2] (blue tube), allows the Air Cylinder to close the Flapper allowing water to accumulate in the bowl, restoring a proper water surface area.
4. Near the bottom of the piston stroke, the air passageway from Port 10 (yellow tube) to the Hopper Port 11 is unblocked for 4-11 seconds to pressurize the hopper and expel the waste contents over the trap and into the waste line.
5. As the A/W Seq. Spool reaches the bottom position, the water supply is shut off, completing the flush cycle.



In the event of air supply failure, the spring in the Air/Water Sequence Valve maintains the valve in the closed position, blocking the water passageway. The flapper will open and allow water in the bowl to flow into the hopper forming a water seal.



4-11.1.2 Cleaning

Use Micro-Clean Organic Spray Cleaner, P/N 24542, or equivalent cleaner approved by Microphor designed for Micro-flush toilets. Caustic drain openers or non-biodegradable cleaners should not be used.

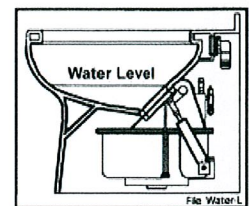
1. While depressing the flush activator, turn OFF the water. Allow the bowl cleaner to flow into the lower chamber. Keep the flush deactivator pressed.
2. Insert bowl brush into lower chamber and agitate mixture.
3. Remove the bowl brush and release the flush activator.
4. Turn the water ON and flush twice to rinse thoroughly. If using a cleaner other than one with a Microphor Biological Waste Treatment System, check with your Wanderlodge dealer or with Microphor for acceptable cleaners. You can access Microphor's website by <http://www.microphor.com>

4-11.1.3 Clearing Plugged Toilet

Turn water OFF, press flush handle and hold to remove water from the bowl. The flapper in the bottom of the toilet will remain open until the flush handle is released. Check to see if the restriction can be removed from the hopper with a hooked wire, being careful not to damage the rubber seal on the flapper or the mating surface on the hopper. If obstruction cannot be picked out with a hook or tongs, use a plunger by pushing in slowly and pulling out quickly to pull object back into the hopper. If necessary, turn the air OFF and use a snake inserted through a 12" plastic pipe placed in hopper. The pipe will protect the flapper seal from damage. If the Air/Water Sequence Valve will not operate with the water turned OFF, hold the flush lever down and turn the water ON and OFF quickly to free the valve action. When the passage becomes clear, turn the water ON and press the flush handle to start the flush cycle.

4-11.1.4 Winterizing

Shut OFF water to toilet. Flush toilet three times or until water no longer flows into the bowl. Unhook water supply at angle stop. Empty water in line into receptacle. Shut OFF air supply to the toilet. The unit is now prepared for freezing temperatures. Open petcocks on drip legs and air receiver drain after shutting down air compressor and isolating air lines.



4-11.1.5 Cleaning Bleed Off Assembly

Standard Flush – Remove plug and clean with solvent; air blow dry.

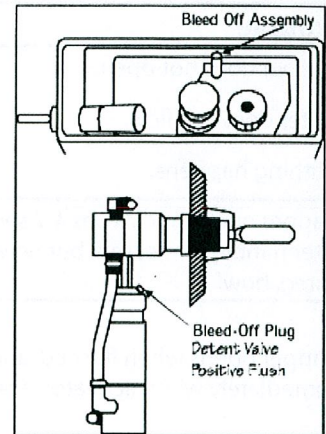
Positive Flush – Remove plug and clean with solvent; air blow dry, remove and clean plug on Detent Valve.

NOTE: Use 5/32" (4mm) Allen wrench to remove plugs.

4-11.1.6 Air System Design

Filter-regulators are available in a variety of sizes and types. Their purpose is to remove water and foreign matter from the air line and to maintain a constant pressure of 60-65 psi to the toilet. The following steps must be observed to assure moisture will be removed from the air line.

1. Drain air compressor receiver regularly. Most water tends to accumulate at this point.
2. Install drip legs with condensate drains at all low points in air piping.
3. Whenever possible, grade all air lines back to the air receiver or drip leg assembly and drain regularly.
4. The air supply to the toilet must be taken from the top of the main or branch air line.



4-11.1.7 Troubleshooting

Your Microflush® toilet is designed to give you years of trouble-free operation. Please check the following before beginning any service or repair.

Water supply:

1. Is the water turned on?
2. Is the water pressure between 20 and 50 psi at the toilet for pressure water system?
3. Is there 6 feet minimum of head for gravity systems?

Fluctuating or high water pressure can cause intermittent problems with the toilet operation. Check the water pressure at different times of the day (i.e., early morning, noon, evening) to determine if you have fluctuating or high water pressure. A pressure-reducing valve installed on the incoming water line will assure you have even pressure. Make sure no check valve is installed before the Air/Water Sequence Valve.

Air system:

1. Is the air turned on?
2. Is the air pressure set at a constant 60-65 psi at the toilet?
3. Do you have any air leaks or kinks in the air system?
4. Do you have water in the air system? This usually causes irregular timing.

Drain the compressor tank and check the filter regulator and drip leg(s) for water. To check for water in Air/Water Seq. Valve, remove Bleed-Off Plug, put finger over screw opening and flush. If water is present, it will squirt out. If water is detected, then the air cylinder and airlines must also be drained.

Cycle time:

1. Is the flapper cycle time set correctly at 4-8 seconds?
2. Is the bleed off assembly plug blocked? Remove, clean and reinstall.

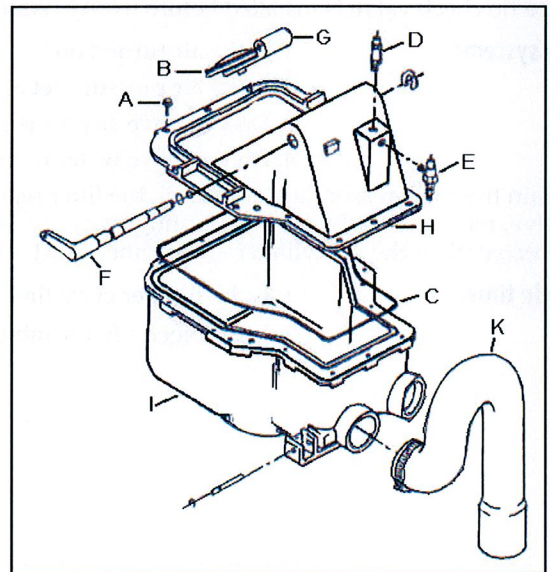
Trouble	Possible Causes	Correction
Flapper does not open. Water does not flow. Nothing happens.	1. No air supply to Microflush. 2. Water has accumulated in Air/Water Sequence Valve	1. Supply compressed air at 60-65 psi. 2. See Check Air System.
Flapper opens and closes 4-7 seconds after handle is released, but no water enters bowl.	1. No water supply to Microflush. 2. Water turned off.	1. Supply water at 20-50 psi. 2. Open angle stop (shut-off valve).
Flapper opens when flushed, and closes immediately when activator is released.	1. Excessively high water pressure. 2. Debris in check valve at base of Air/Water Sequence Valve.	1. Install water pressure regulating valve, set at 20-50 psi. 2. Clean Air/Water Seq. Valve.
Flapper opens and will not close.	Bleed-Off plug blocked.	Remove, clean or replace, reinstall.
Water continues to run when Microflush is not in use.	Foreign object is under water valve in Air/Water Sequence Valve.	Clean Air/Water Sequence Valve. Reference Service Kit P/N 95057.
Water splashes when flushed.	Water is too high in bowl.	Reduce incoming water via angle stop.
Flush cycle is too long.	Bleed-Off plug blocked.	Remove, clean or replace, reinstall.
Flush cycle is too short.	Bleed-Off plug hole too large or related air lines leaking.	Remove, replace, and check for air line leaks.

If other problems are encountered, please contact the factory: Toll Free 1-800-358-8280

4-11.1.8 Basic Repair Procedures

Hopper Components

A	00064	SS Mounting Screws (14 each)
B	27207	Gasket, flapper
C	27272	O-Ring Seal, Hopper Top to Bottom
D	37518	Pressure Relief Valve
E	37548	Bleed Valve
F	90042	Crank Arm Assy
G	90048	Flapper Assy
H	9001 2-3	Hopper Top with Crank and Flapper Assy
I	45060	Hopper Bottom Assy (not including P-trap)
J	96029	P-Trap Assy, Rear Discharge
K	95157	P-Trap Assy, Downward Discharge
	20137	Valve Mounting Bracket
	48718	Conduit Clamp
	10194	Retaining Ring, Air Cylinder

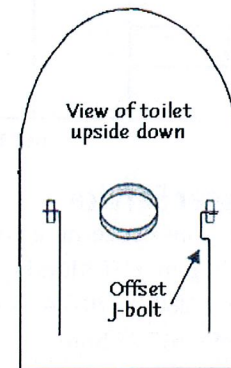
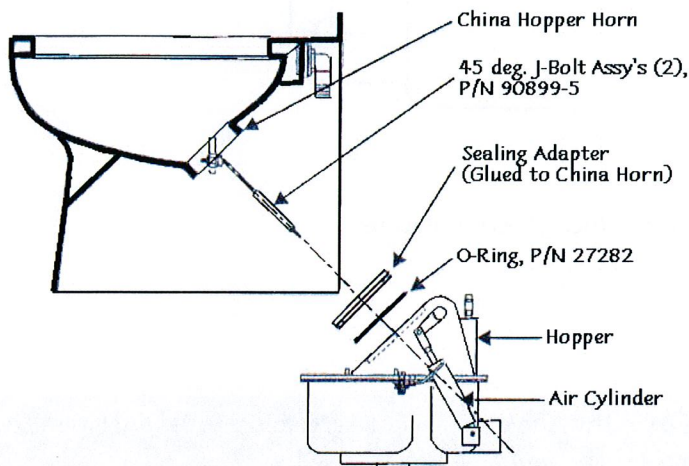
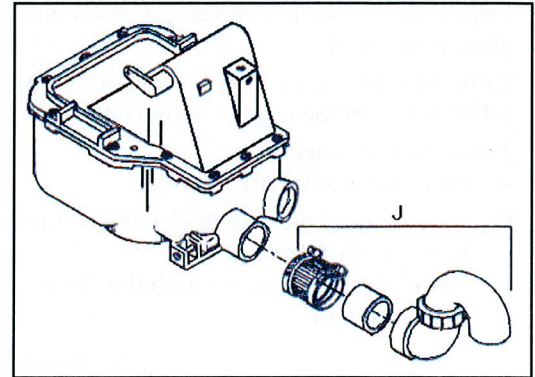


4-11.1.9 Hopper Replacement

!!CAUTION: Read this entire procedure before beginning work!

1. Remove toilet from floor. Place toilet upside down on a sheet of cardboard or other padded material.
2. Remove nuts from hopper supports on either side of hopper, lift hopper from bowl.
3. Remove o-ring between hopper and seal adapter. Check that o-ring is not damaged, replace if necessary.
4. Re-assemble in reverse order.
Make sure J-bolts are tight, and pulled tight to china hopper mounting flange!

NOTE: The air cylinder on the hopper sub-assembly should be cleaned, lubricated and checked for adjustment whenever the toilet assembly is removed for servicing.



4-11.1.10 To Change Flapper Gasket:

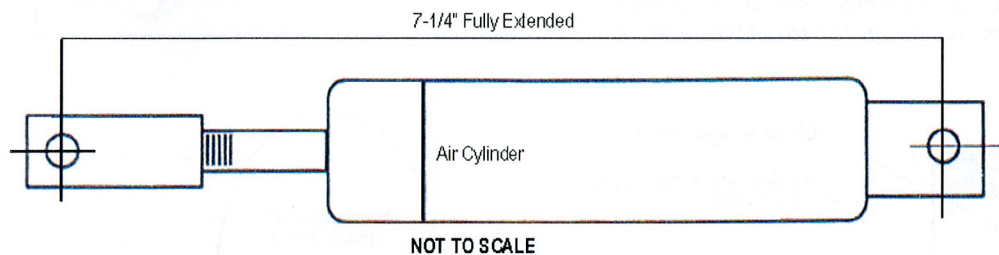
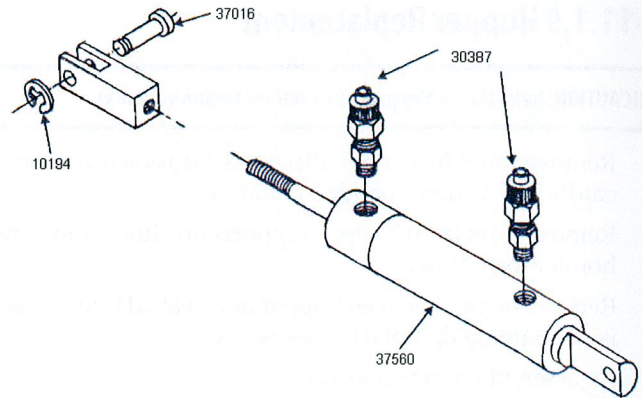
1. Turn water and air off.
2. Reach behind flapper to grasp gasket tails.
3. Pull tails out of slots to remove old gasket.
4. Installation is the reverse of removal.
5. Tails must be pulled all the way through to insure smooth surface.

4-11.1.11 Air Cylinder Adjustment

1. Remove toilet from floor.
2. At hopper, remove upper and lower retaining rings and clevis pin.
3. Inspect the crank arm, clevis and clevis pin for wear. Replace if required.
4. Fully extend the air cylinder – it should measure 7-1/4" between the centers of two mounting holes.

Adjust as necessary:

- A. Fully extend the Air Cylinder.
- B. Protect the shaft with thick cloth or rubber and hold firmly with pliers.
- C. Place a screwdriver through the clevis mounting hole and turn: clockwise to shorten length; counterclockwise to extend length.



4-11.1.12 Customer Service

If you have any questions concerning your Microphor product, please contact us:

8:00 a.m.-5:00 p.m. PST Monday-Friday

Tel: (800) 358-8280 or (707) 459-5563

Fax: (707) 459-6617 24 hours

Website: www.microphor.com

IMPORTANT NOTE: Only do service procedures yourself if you have the knowledge and experience to do so. If unsure, contact a Wanderlodge service center or a qualified professional to have the procedure performed.

4-11.1.13 Cautions

Refer to the following table for cautions that need to be adhered to concerning the toilet.

Water Pressure	Must be regulated at an even pressure between 20 to 50 PSI at the toilet.
Air Pressure	Must be regulated at 60-65 PSI constant at the toilet.
Pipe Sealant	Use plastic compatible teflon based pipe sealants.
Do Not Use	Any "Loctite" brand adhesive on any plastic or Delrin components, as fumes will cause damage to plastic parts.
Do Not Use	Products containing petroleum distillates or formaldehyde on any rubber parts. Use Only Silicone Lubricants!
Do Not Use	Teflon tape on any air fittings as clogging may occur.