

## Microflush Half Gallon Toilets

### Model LF-310 Air Operated



### Installation/Service Manual P/N 24156



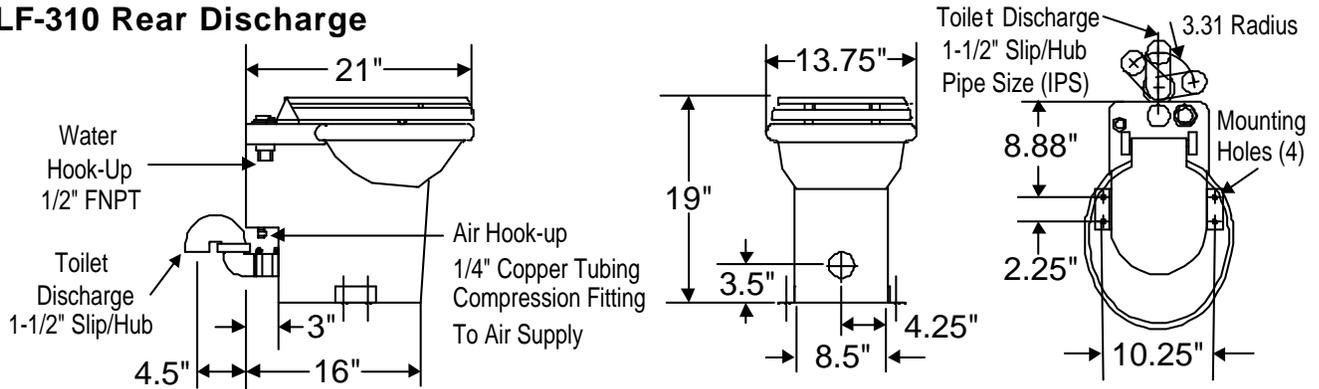
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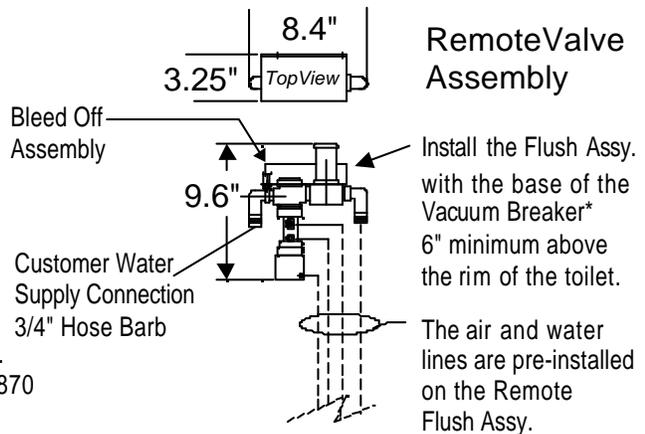
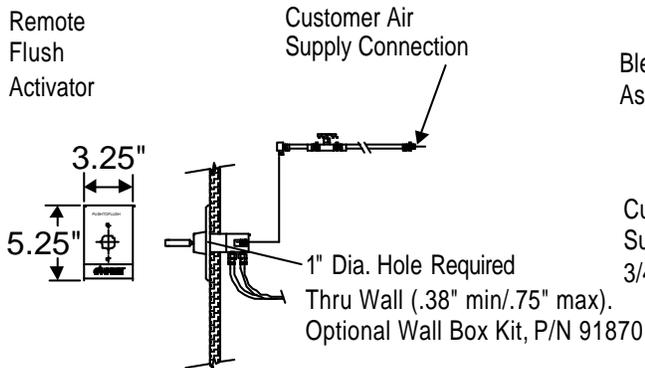
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**ROUGH-IN DIMENSIONS** (± 0.5")

**LF-310 Rear Discharge**



**Remote Flush Rough-In**

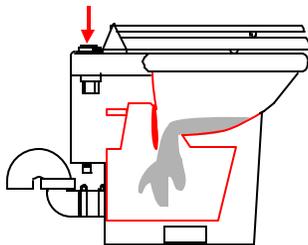


THE MAXIMUM WATER LINE DISTANCE BETWEEN THE TOILET AND THE REMOTE FLUSH ASSY IS SIX (6) FEET.

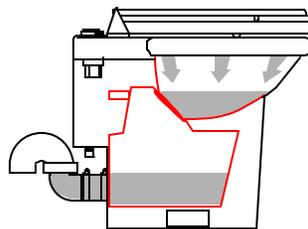
\* Note: Vacuum Breaker may not be used, depending upon toilet model.

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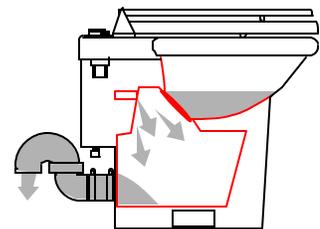
**How Microflush Toilets Operate**



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. Cleanwater 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 wasteline.

Grfc:310-op

## THANK YOU!

Thank you for purchasing a Microphor product. Please read this manual completely prior to installation of your Microflush® toilet. Microphor General Terms and Conditions Covering Sales apply.

## CUSTOMER SERVICE

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

8:AM-5:PM PST Monday-Friday  
Tel: (800) 358-8280 or (707) 459-5563  
Fax: (707) 459-6617, 24 hour  
Website: www.microphor.com  
E-Mail: info@microphor.com

## PATENTS

Microflush toilets are covered by one or more of the following U.S. patents 5245710; 4918764; 1280554; 169471 and related foreign patents.

## CHANGES IN DESIGN

Continuing a policy of research and development, Microphor reserves the right of price, product or design change without notice or obligation.

## APPLICATIONS

Read this manual for land based or RV/Bus.  
Read this and form 24164 for Rail installations.

## CAUTIONS

**Water Pressure** must be regulated at an even pressure between 20 to 50 PSI **at the toilet** if a pressurized water system. If gravity water supply, a different Air/Water Sequence Valve is provided of which 6 feet minimum of head is required.

**Air Pressure** must be regulated at 60-65 PSI constant **at the toilet**.

**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 Lubricant!*

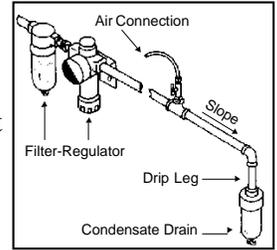
**Do Not Use** Teflon tape on any air fittings as clogging may occur.

## AIR SYSTEM DESIGN

Filter-regulators are available in a variety of sizes and types. Their purpose is to remove water, oil and other 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 airline:

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 airlines back to 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.



## AIR COMPRESSOR

Be certain compressor crankcase has proper oil levels. Locate the compressor in a clean, dry, well ventilated location. Size compressor according to Air Compressor Specifications Sheet, Form 273.

## INSTALLATION PROCEDURE

Read Installation Procedures completely regarding all installation/start up points prior to installation.

## AIR CONNECTION

Install a filter-regulator assembly in airline. Place the filter-regulator as close as possible to the first toilet and in an accessible location. The plastic airline (provided with Air Connecting Kit) from the air source connects to the toilet at the flush activator. Install air shut-off valve at toilet. Do not over-tighten fittings on toilet. Blow any debris from airline prior to connecting to toilet.

**Regulate air pressure at 60-65 PSI constant for proper operation.** Where an air main is required, such as a 1/2" copper line, the air line to the toilet should be connected to the top of the main airline to prevent condensation reaching the toilet.

NOTE: See page 6 for airline connection locations.



## WATER CONNECTION

LF-310: 1/2" FNPT

If a pressurized water system, water pressure must be regulated at an even pressure between 20 to 50 PSI at the toilet for it to operate properly. If using a gravity water supply, a different Air/Water Sequence Valve is provided for under 20 psi, for which 6 feet minimum of head is required. Convert toilet to water angle stop.

## DRAIN CONNECTION - See Rough-In

Rear discharge line should be connected at hopper with a No-Hub Coupling (P/N 33324, provided). Do not glue or connect fittings until fitting alignment has been checked. The toilet discharge line must have an inverted p-trap within 7" of the hopper in order to provide a water trap seal and a little back pressure in the hopper to allow good evacuation.

## INSTALLATION

### Reference Exploded View

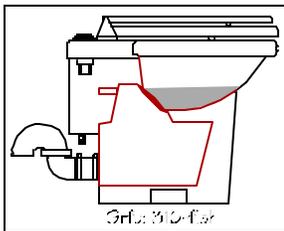
1. Remove back shroud and valve cover to facilitate mounting toilet.
2. Connect discharge outlet at back of toilet to discharge line. Be sure discharge line is in-line with outlet of toilet.
2. Connect air supply line to air inlet at back of toilet.
3. Connect water supply line to water inlet on side of toilet (½" FNPT)
4. Bolt toilet to floor or deck.
5. Install back shroud and valve cover.

## START-UP

1. Turn on water to toilet. Check for any leaks.
2. Turn on air to toilet. Check total installation for any air leaks with soapy water.
3. Flush toilet four times, waiting twenty (20) seconds between flushes to get water through toilet and operating properly. To flush properly, hold down handle or flush button until flapper opens.
4. Check that water level in bowl is at the top edge of the flapper opening.
5. If toilet does not operate properly, refer to Adjusting Toilet below or to Troubleshooting section of this manual.

## ADJUSTING TOILET

Turn water fully ON to toilet. If necessary, adjust water level in bowl to correct height at top edge of flapper opening by turning water shut-off valve located next to toilet.



## CLEANING

Use Micro-Clean Organic Spray Cleaner, P/N 24542. Caustic drain openers or non-biodegradable cleaners should not be used if the plumbing system is connected to a septic tank or biological treatment system. Clean as follows:

1. While depressing the flush activator, turn OFF the water. Allow the bowl cleaner to flow into the lower chamber. Keep the flushing activator depressed.
2. Insert bowl brush into lower chamber and agitate mixture. Be careful not to damage flapper seal.
3. Remove brush and release the flush activator.
4. Turn water ON, flush twice, rinse thoroughly.

## CLEARING THE TOILET

If the toilet becomes plugged, shut off the water supply, press the flush handle and hold. Flapper in the bottom of the toilet will remain open until flush handle is released. Check to see if the restriction can be removed from lower portion of toilet with a hooked wire, being careful not to damage the rubber seal on the flapper or the mating surface on the hopper. If obstruction can not be picked out with a hook or tongs, use plunger by pushing in slowly and pulling out quickly to pull object back into the hopper. If necessary, turn air off and use a small drain snake inserted into a short plastic pipe placed in hopper. Pipe will protect flapper seal. When the passage becomes clear, turn on the water and air and press flush handle to start the flush cycle.

## ROUTINE MAINTENANCE

Your Microflush toilet requires periodic lubrication with silicone based lubricants. See Service Kits on page 7.

Usage	Lubricate
Light	Every 5 years
Medium	Every 2-3 years
Heavy	Every year

Note: most railroad applications have an automatic lubricator installed.

## WINTERIZING (out-of-service winter storage)

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 airlines.

**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.

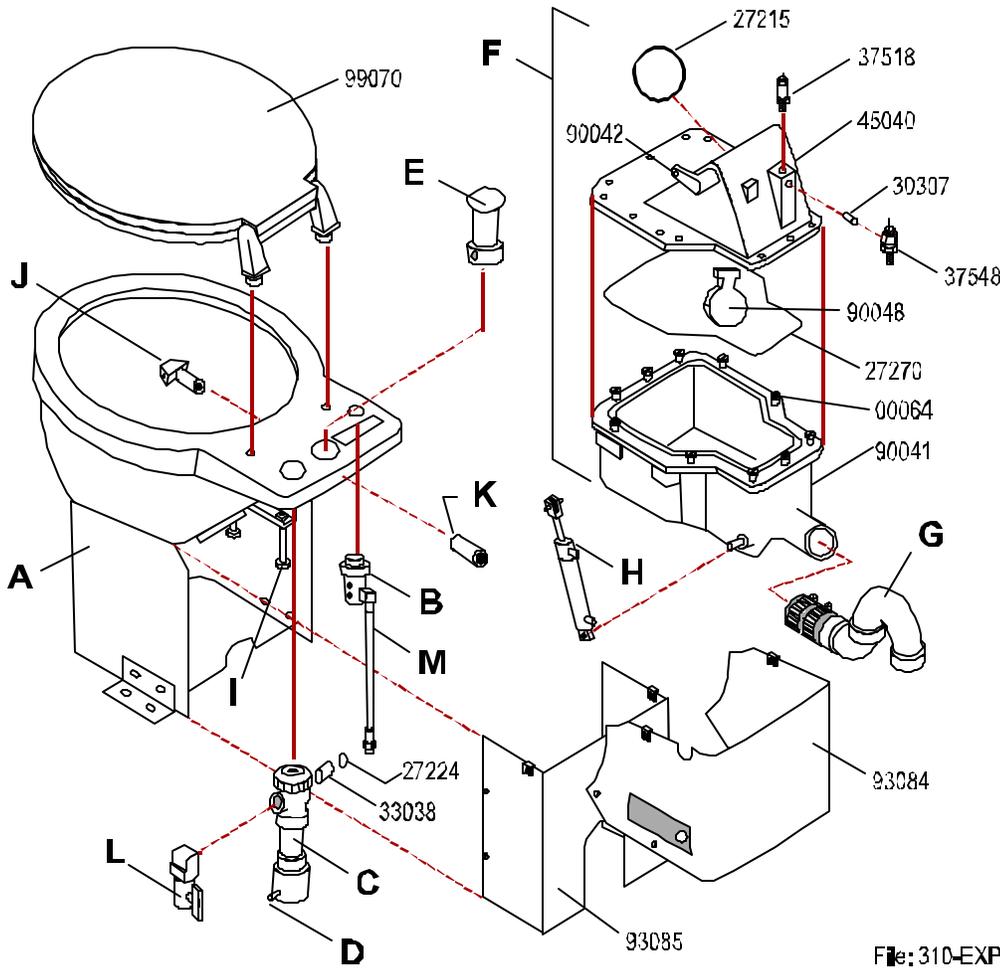
Drain the compressor tank and check the filter regulator and drip leg(s) for water. To check for water in Air/Water Seq. Valve, remove Bleed-Off Plug, put finger over screw opening and flush. If water is present, it will squirt from sides of valve body. If water is detected, then the air cylinder and 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 or replace.

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 at the toilet. 2 See 'Check Air System" above.
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 at the toilet 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 Valve.
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

EXPLODED VIEW - Model LF-310



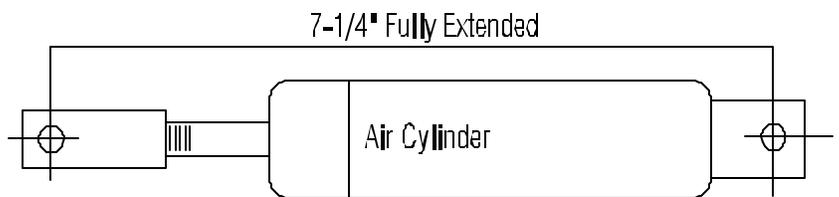
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**AIR CYLINDER ADJUSTMENT INSTRUCTIONS**

1. Remove side shrouds or hopper if necessary.
2. Remove clevis pin retaining ring and clevis pin.
3. Inspect crank arm, clevis and clevis pin for wear. Replace if required.
4. Hold the crank arm in the UP position (flapper closed).
5. Fully extend the air cylinder and note the position of the holes in the crank arm and the clevis. The clevis hole should extend half its diameter past the crank arm hole. Adjust as necessary by turning the clevis clock-wise to loosen, counter clock-wise to tighten. Make sure not to nick or damage the shaft.
6. Re-install side shrouds or hopper.

**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.

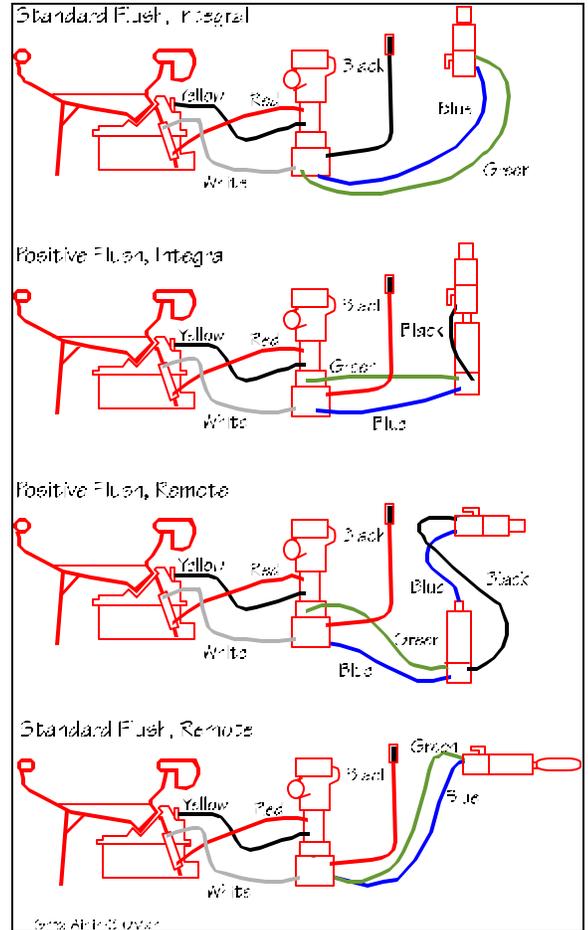


NOT TO SCALE

**PARTS CHART**

	Toilet Model		LF-310	
	Valve Location		Internal	Remote
	Valve Type		Pressure	Gravity
A	Toilet Shell (SS Finish)		93082	93082
	LF-310 Valve Cover		93084	93084
	LF-310 Back Shroud		93085	93085
B	Flush Activator/Pilot valve		95561	95564
	Pilot Valve only		95562	95562
C	Air/Water Sequence Valve		39501	39014
	Valve Rebuild/exchange		99899	99899
	Cap		39013	39097
	Mounting Bracket		N/A	
D	Bleed Off Plug		30382-3	
E	Vacuum Breaker		33539	
F	Hopper Assy, Rear		90039-3	
	Gasket, Hopper to Bowl		27215	
	Crank Assy		90042	
	Flapper Assy		90048	
	Flapper Gasket		27207	
	Screws (14 ea)		00064	
	Top		45040	
	Bottom, Rear		90041	
	Gasket, between halves		27270	
	Bleed Valve		37548	
	G	P-Trap		96029
H	Air Cylinder		94540	
I	Mounting Assy, Hopper		00006 - 4 each, 00106 - 4 each	
J	Spud Assy		96579	
K	Water Supply Tube		96002	96006
L	Water Connection		96515	
M	Air Fittings, 1/4" O.D.	30385 - 90 Elbow, 30365 - Straight, 30396 - Nut/Ferrell		
	Air Tubing per foot	35381 - green, 35419 - black, 35383 - red, 35384 - yellow, 35385 - white, 35382 - blue		
	Air Shut-Off Cock	30008		
	Air Connecting Kit	93086		
K I T S	Master Service Kit		93100	
	Air/Water Seq. Valve Kit		95057	
	Air Cylinder Kit		94502	
	Flush Activator Kit, Std.		95020	
	Flush Activator Kit, Positive		95122	
	Flapper Kit		90066	
Vacuum Breaker Kit		95037		

**Air Line Layouts**



**Air Lines From Air/Water Sequence Valve**

