



**PUMP COMPANY**

Zoeller Family of Water Solutions™

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Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

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Zoeller Pump Company  
Product on our website:  
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HOME GUARD  
**MAX**

**MODEL 503**

**WATER POWERED EMERGENCY BACKUP  
SUMP PUMP SYSTEM  
PVC CONSTRUCTION  
PREINSTALLATION CHECKLIST**

1. **Inspect your pump.** Occasionally, products are damaged during shipment. If the unit or any of the parts are damaged, contact your dealer before using.
2. **Read all the installation instructions** regarding installing and start up before performing any of the work described within. Retain for future reference.



**WARNING**

SEE BELOW FOR LIST OF WARNINGS

1. **For your protection always disconnect the power supply** from its power source before handling the components of your primary pump.
2. Sump water is non-potable. To reduce the risk of contamination of the potable water supply, the Home Guard® Max must be installed with a listed backflow device suitable for the installation, in accordance with the local plumbing code, such as a reduced pressure principle backflow preventer (RP). Alternately, consult the local plumbing and health codes or the authority having jurisdiction for guidance on cross-connection and backflow protection requirements.

**CAUTION** Turbulence caused by high velocity incoming water can negatively affect the on/off action of the float mechanism. If this condition exists, the incoming water must be baffled to avoid excessive turbulence.

**CAUTION**

SEE BELOW FOR LIST OF CAUTIONS

1. This pump is designed for handling clear water. Do not use in septic tanks to pump effluent or sewage pits to pump sewage.
2. Repair and service of your backup system should be performed by an authorized service station.
3. The installation of this backup pump requires the use of a variable level float switch for operation. It is the responsibility of the installing party, to ensure that the float switch will not hang up on the pump apparatus or pit peculiarities and is secured so the pump will turn "on" and "off". It is recommended that the pit be 18" in diameter or larger to accommodate both a primary and a backup pump.
4. Check the installation of the primary and backup pump floats to ensure that both move freely and are not being encroached upon where the float cannot move. Adequate space between the floats must be maintained.
5. The pump should be manually activated once a month by lifting the float rod. Let the pump run for at least 15 seconds to prevent the pump from building up calcium deposits and debris, which could harm the pump.

REFER TO WARRANTY ON PAGE 2.

# LIMITED WARRANTY

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, every new product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of three years from date of manufacture. Parts that fail within the warranty period, that inspections determine to be defective in material or workmanship, will be repaired, replaced or remanufactured at Manufacturer's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or act of nature; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that has been exposed to outside substances including but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons, hydrocarbon derivatives (oil, gasoline, solvents, etc.), or other abrasive or corrosive substances, wash towels or feminine sanitary products, etc. in

all pumping applications. The warranty set out in the paragraph above is in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products.

Contact Manufacturer at, 3649 Cane Run Road, Louisville, Kentucky 40211, Attention: Customer Support Department to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

**MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.**

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

**In those instances where damages are incurred as a result of an alleged pump failure, the homeowner must retain possession of the pump for investigation purposes.**

## Helpful Hints For Easy Installation

1. The system is designed for installation in sumps with minimum diameter of 18" and depth of 22". For smaller applications, consult factory.
2. Remove all debris from the pit before installation.
3. Be sure that the pump is clamped securely to the primary pump discharge pipe and that the two pumps do not interfere with each other.
4. Install a serviceable check valve in the discharge line.
5. Install a filter or strainer in the water supply line before the pump. Size the filter/strainer properly to minimize pressure drop, while retaining particles 0.020" (0.5 mm) in diameter and larger.
6. Test the unit immediately after installation. Refer to STEP 5.
7. Check the Float ON/OFF levels per STEP 2 of the instructions.
8. Keep the model number, date code, and installation instructions in a convenient location for future reference.

## Do's And Don'ts For Installing A Unit

1. DO read all installation materials supplied with the pump.
2. DO inspect unit for any visible damage caused by shipping. Contact dealer if unit appears to be damaged.
3. DO clean all debris from the pit before installation.
4. DO install a union check valve (see STEP 3) in the discharge line. DO NOT use a discharge pipe smaller than the recommended pump discharge sizes.
5. DO install a filter or strainer in the water supply line before the pump to prevent small particles from clogging the operating valve.
6. DO test the pump immediately after installation to be sure that the system is working properly.
7. DO review all applicable local and national codes and verify that the installation conforms to each of them.
8. DO NOT use the Home Guard® Max with hot water. DO NOT use the Home Guard® Max to remove wastewater, sewage, effluent, or water with debris in it.
9. DO NOT use a garden hose. Garden hose is not designed to hold municipal pressure indefinitely and could leak or burst causing flooding. The Home Guard® Max requires a permanent piping method such as copper, PEX, or CPVC.
10. DO install the Home Guard® Max pump with only a ¾" supply line.
11. DO install a union or other quick-disconnect fitting to make the pump accessible for servicing on both the water supply and discharge piping.
12. DO install a dedicated shut-off valve on the water supply line within 6 ft. (1.8 m) of the Home Guard® Max.

# INSTALLATION

The Home Guard® MAX pump can be installed very easily as a standby to an electric sump pump (see sketches).

## **▲ WARNING**

Sump water is non-potable. To reduce the risk of contamination of the potable water supply, the Home Guard® Max must be installed with a listed backflow device suitable for the installation, in accordance with the local plumbing code, such as a reduced pressure principle backflow preventer (RP). Alternately, consult the local plumbing and health codes or the authority having jurisdiction for guidance on cross-connection and backflow protection requirements.

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## STEP 1: Placement of the Pump in the Pit

Note: If your pit has a cover, it will have to be modified to accommodate the Home Guard® Max pump.

- 1.1) Inspect the pit for debris and clean as necessary.
- 1.2) Place the pump in the pit, making certain that the inlet fitting of the pump is at least 6" above the basement floor or top of the sump pit. Ensure the pump is clamped securely to the primary pump discharge pipe. Mark the location on the discharge pipe.

**▲ IMPORTANT** This pump is to be used as a backup to your primary pump. Make certain that there is no interference between the two pumps, especially between the float systems.

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## STEP 2: Pump Float Stop Adjustment

- 2.1) With the Home Guard® Max pump in the pit, measure the desired float ON position (this should be a few inches above the ON level of the existing pump). The pump turns on at a water level of 2" to 3" below the upper float stop, depending on the incoming water pressure. Calculate the appropriate float stop location based on this distance.
- 2.2) The OFF level is determined by the buoyancy of the float as well as the incoming water pressure, roughly 6" to 8" below the ON level. The OFF level must be above the suction screen of the foot valve. Adjusting the lower float stop will not change the OFF level of the pump. It is recommended to install the lower stop tight to the bottom of the float so that it cannot move on the float rod.
- 2.3) Remove the pump from the pit and adjust the float stops as necessary. Tighten all screws. Be sure to tighten the lower stop properly so that it will not come off. If the lower stop comes off, the float can drop off the float rod, rendering the pump non-operational and possibly damaging the pump.
- 2.4) Replace the pump in the pit at the same location on the primary pump discharge pipe as marked earlier (Step 1.2). This will ensure that the ON and OFF levels are consistent with the calculations.

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## STEP 3: Installation of the Discharge Piping

- 3.1) Glue 1½" pipe into the pump discharge connection as shown in the figure on page 5 (reference SK2721).
- 3.2) Per the Uniform Plumbing Codes and IAPMO PS119, the discharge of the water-powered sump pump should not be connected to the discharge of the primary sump pump. The discharge piping for water-powered sump pumps must have an air gap and extend outside of the building, with the end of the pipe between 6 and 24 in. (150 and 610 mm) above the ground or the flood level of the area receiving the discharge.
- 3.3) In order for this installation to work properly, a check valve must be installed onto the discharge line. The following Zoeller check valves are recommended: 30-0100; 30-0101; 30-0102; 30-0103. Some local codes require a union check with ball valve. Check your local code requirements to ensure that the installation complies.

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## STEP 4: Installation of the Source Water Piping

## **▲ WARNING**

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## STEP 4: *continued*

- 4.1) Shut off the municipal water supply and plumb ¾" tubing/piping into the municipal water supply line. This must be branched off of a ¾" line and plumbed with ¾" tubing/piping to the Home Guard® Max . Do not use garden hose or other flexible hose/tubing. Install a shut off valve in the ¾" supply line to the Home Guard® Max. Use the appropriate back-flow prevention for your jurisdiction. Supply piping shall be made of materials and methods approved by the local plumbing codes.
- 4.2) Do not braze/solder copper fittings within 18" of Home Guard® Max, as the heat from the torch will damage the pump body.
- 4.3) When assembling threaded fittings into the Home Guard® Max inlet, do not use pipe dope on the inlet threads, use PTFE (Teflon®) sealing tape. Take special care to keep any debris (including pieces of tape) from entering the inlet fitting that might get caught in the operating valve.
- 4.4) The Home Guard® Max includes a field installed Push-to-Connect fitting. This fitting is designed to be used with ¾" PEX, CPVC, or copper pipe. The fitting must be installed on the ¾" NPT thread of the pump inlet fitting. **Caution must be used when installing the fitting to not over tighten the inlet fitting and crack the body. Using a backup wrench, hold the inlet fitting while tightening the Push-to-Connect fitting.** If the Push-to-Connect fitting is not used, the same precaution must be used when installing any other fitting to the inlet fitting. A union or quick-disconnect fitting should be installed to make the pump accessible for servicing.
- 4.5) Purge the water line prior to connecting to the Home Guard® Max to ensure that debris does not enter the unit and clog the operating valve. Install a dedicated shut-off valve on the water supply line within 6 ft. (1.8 m) of the Home Guard® Max.
- 4.6) If using the Push-to-Connect fitting, cut the tube so that the ends are square. Ensure that there are no burrs or damage to the cut end. Once the tubing end is cut square and clean, scribe a depth mark on the outside of the tubing 1" from the end. Insert the tube through the release collar to rest against the grab ring. Push the tube firmly with a slight twisting action until it reaches the tube stop. The depth mark should be up to the end of the release collar. The tube liner is not necessary with CPVC or Copper tubing, and may be removed based on preference or local codes. The tube liner can be easily removed by pulling it out with a needle nosed pliers.
- 4.7) Once the pump has been installed and the municipal water source connected, slowly open the municipal water source valve and the supply line valve. Inspect the valve body and all connections looking for leaks. Close the municipal water valve and fix any leaks before operating the pump.

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## STEP 5: Testing of Pump Operation

- 5.1) Unplug the primary pump so that it does not start.
- 5.2) Fill the sump with water until the Home Guard® Max starts. NOTE: The sump must be full of water for the pump to shut off properly.
- 5.3) Verify that the pump starts and stops at the desired ON/OFF points.
- 5.4) Verify that there are no leaks in the discharge line.
- 5.5) If adjustment is necessary, raise or lower the stops according to STEP 2.
- 5.6) If the pump is not operating properly after following the above steps, refer to the Troubleshooting guide.
- 5.7) When finished testing, plug primary pump back into AC receptacle.
- 5.8) Adjust alarm reed switch (optional) to desired level, if necessary. Refer to FM2571 for Alarm System Instructions. Be sure to install 9V battery in Alarm Panel.

## WATER PRESSURE:

- 40 PSI minimum with valve open.
- 80 PSI maximum with valve open.
- 100 PSI maximum with valve closed.

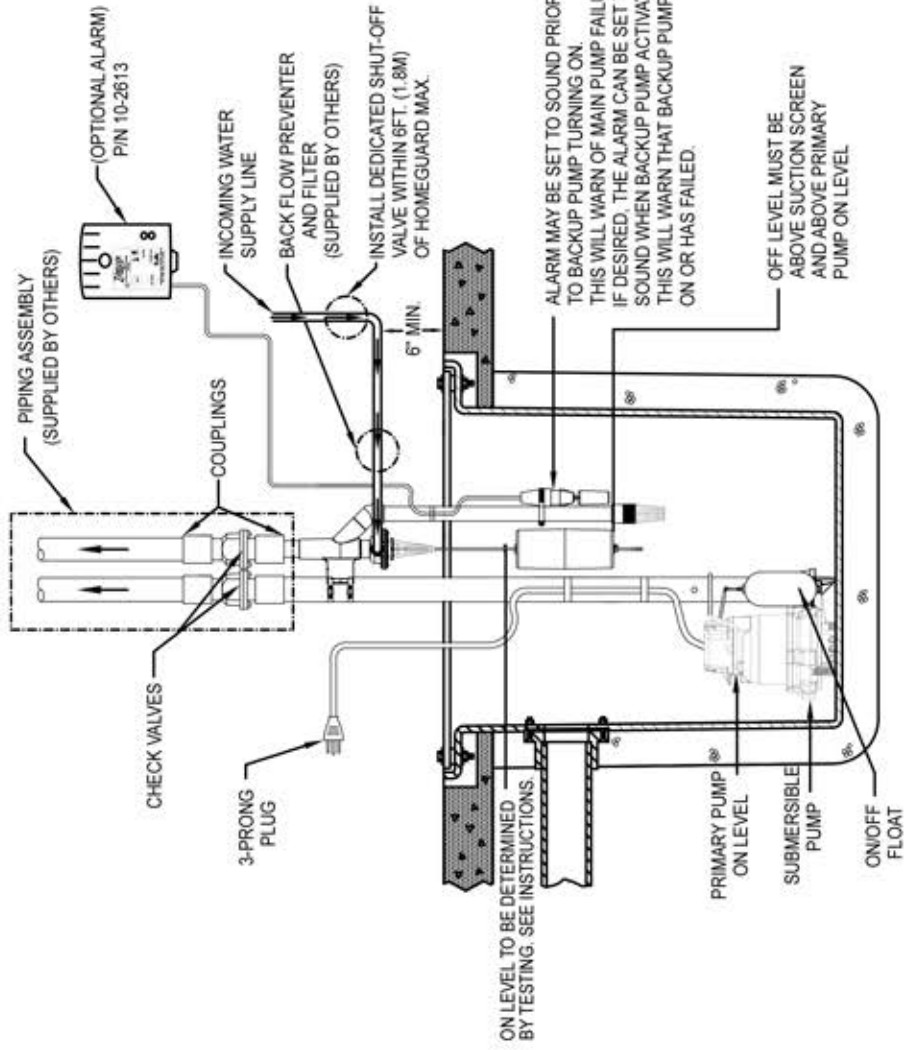
## EFFICIENCY:

The pumping capacity increases with household water pressure and flow.

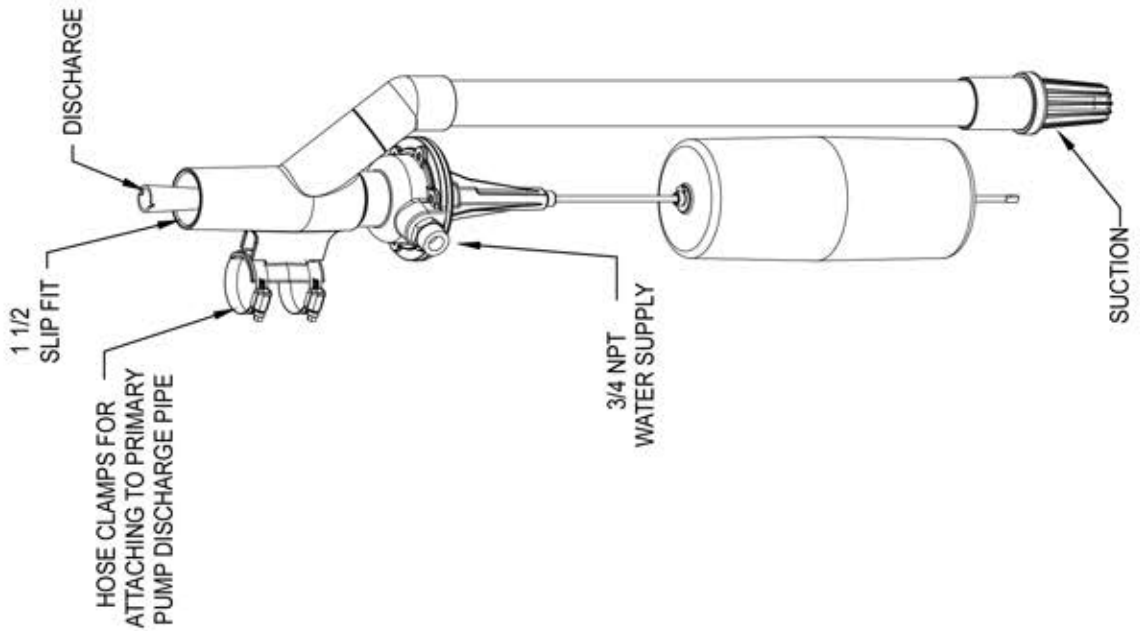
At an eight-foot static head and a supply pressure of 40 PSI at water supply inlet with water flowing, it takes one (1) gallon of supply water to remove one and a half gallons from the sump. As the supply pressure increases with the static head constant, less supply water is required.



# TYPICAL INSTALLATION WITH SUBMERSIBLE PUMP AND SEPARATE DISCHARGE PIPE

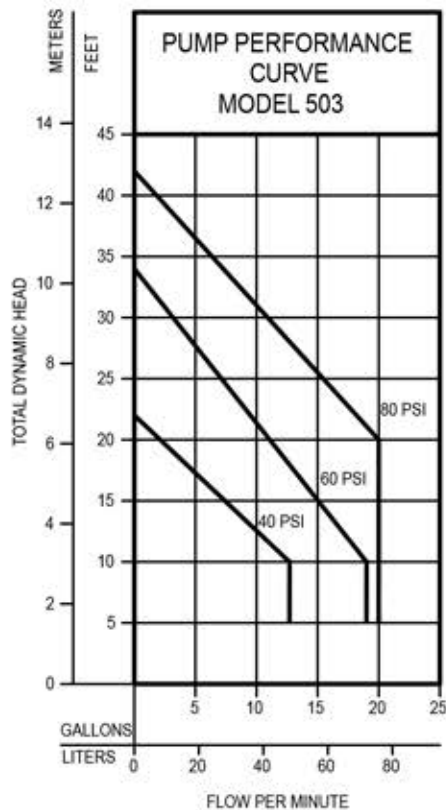


## PUMP DETAILS



# PERFORMANCE CHARACTERISTICS

## TOTAL DYNAMIC HEAD/FLOW PER MINUTE DEWATERING ONLY



MODEL		503					
		40 PSI		60 PSI		80 PSI	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	12.7	48.1	19.0	72.0	20.0	75.7
10	3.0	12.7	48.1	19.0	72.0	20.0	75.7
15	4.6	7.4	28.0	15.0	56.8	20.0	75.7
20	6.1	2.0	7.6	11.1	42.0	20.0	75.7
25	7.6	-	-	7.1	26.9	15.3	57.9
30	9.1	-	-	3.2	12.1	10.9	41.3
35	10.7	-	-	-	-	6.4	24.2
40	12.2	-	-	-	-	1.8	6.8
Shut-off Head:		22.0 ft. (6.7m)		34.0 ft. (10.4m)		42.0 ft. (12.8m)	

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Pump capacity varies due to: Inlet Water Pressure, Working Water Pressure, Discharge Elevation, Number of Pipe Fittings, Inlet and Outlet Pipe Size, Fluid Viscosity, Degree of Water Clarity, Water Temperature. The flow rates in the chart are approximate values.

NOTE: Some districts may require a reduced pressure principle backflow preventer per ASSE Standards 1013. Check Local Codes.

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## Troubleshooting Guide

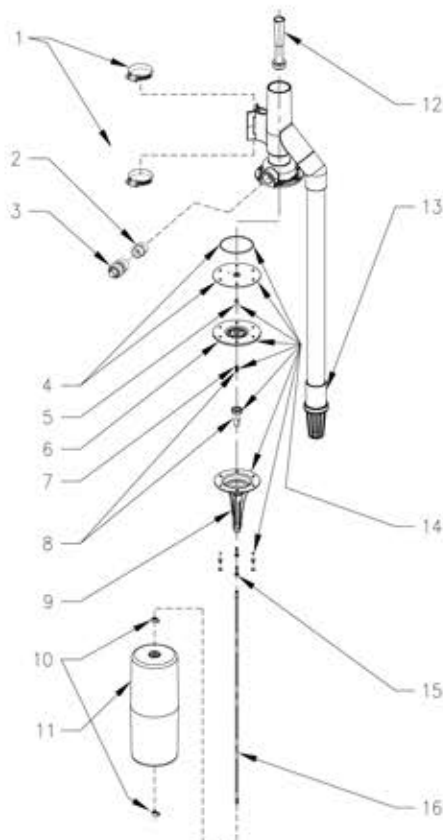
CONDITION	POSSIBLE CAUSE	REMEDY
A PUMP WILL NOT START OR RUN	Inadequate incoming water pressure.	Check incoming water line for closed valve, low water pressure or clogged filter/strainer.
	Excessive incoming water pressure.	Install regulator and reduce pressure below 100 PSI with valve closed.
	Debris around Intake.	Clear debris from pit and foot valve strainer.
	Float hung up on pit or primary pump	Move pumps so that the floats move freely and do not contact pit, piping or each other.
B PUMP STARTS TOO SOON	Float "ON" point is adjusted too low.	Refer to STEP 2.
C PUMP WILL NOT SHUT OFF	Float is obstructed.	Inspect float operation and correct problem.
	Float "OFF" point is adjusted too low.	Refer to STEP 2.
	Foot Valve above water level.	Adjust Float - Refer to STEP 2.
	Internal valve diaphragm vent hole is plugged with debris.	Turn off water supply to pump and back on repeatedly to dislodge debris. If this process does not remedy the problem, service pump to clear debris or replace valve assembly.
	Water level in sump pit was below foot valve when pump was activated.	Turn off water supply to pump. Fill pit with water until the foot valve is submerged. Turn on water supply and activate float by hand. Allow pump to run for 3-5 seconds and release float before the foot valve is above the water level. Pump should shut off normally.
D PUMP OPERATES BUT DELIVERS LITTLE OR NO WATER	Debris around Intake.	Clear debris from pit and foot valve strainer.
	Inadequate incoming water pressure.	Check incoming water line for closed valve or low water pressure.
	Blockage in discharge pipe.	Remove pipe and flush out debris.
	Foot Valve above water level.	Adjust Float - Refer to STEP 2.
	Vertical lift too high.	Change discharge piping or contact technical service.

# ILLUSTRATED PARTS BREAKDOWN

HOME GUARD® SERVICE PARTS - MODEL 503				503-A&B	503-C	503-D	503-E
ITEM	DESCRIPTION	QTY	NOTES	10/08 thru 02/10	03/10 thru 10/10	11/10 thru 05/11	06/11 thru Current
1	Clamps	2	*	001766	001766	001766	001766
2	Backflow valve assembly	1		018587	018587	018587	018587
3	Push connect fitting	1		018584	018584	018584	018584
4	Diaphragm and O-ring	1	*	018588	150553	150553	150553
5	Plunger assembly	1	*	018589	018589	018589	018589
6	Nozzle seat	1		018588	018588	018588	151713
7	Spring	1	*	018564	018564	018564	018564
8	Float rod magnet guide assembly	1		150084	150084	150084	150084
9	Float rod guide	1		150085	150085	150741	150741
10	Float stop assembly	2	*	054085	054085	054085	054085
11	Float	1		018567	018567	018567	018567
12	Venturi	1		4C5534	4C5534	4C5534	4C5534
13	Foot valve	1	**	150260	150260	150260	150260
14	Valve assembly	1		150101	150101	150101	150101
15	Screws	6	*	001885	001885	001885	001885
16	Float rod, long	1		018583	018583	018583	018583
	Float rod, short			N/A	N/A	N/A	151708
*	Rebuild kit	1		150086	150554	150554	150554

\* Items included in rebuild kit.

\*\* Foot valve will need to be cut off as close to top of valve as possible and a new one glued in place.



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