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## Flush Valve Diagnostic Chart

There are numerous problems that may develop in a common household flush valve because it is a rather intricate device. But don't let that scare you-they usually happen one at a time.

It would have been too lengthy a task to prepare a recipe for each possible malady, so we have done the next best thing: we have prepared a diagnostic chart that enumerates, in brief, everything that can go wrong with a flush valve, and which provides the most dramatic and recognizable symptoms of each along with the speediest remedy.

Not all homes and apartments utilize the flush valve system. For those of our readers whose homes employ flush tank systems, there is a diagnostic chart of the same order as the one here.

A word now about the flush valve, and its advantage over other toilet systems, would be appropriate.

The greatest advantage of this mechanism is that it makes for what we call "instant flush." That is to say, you can flush as many times as you wish without waiting. This is handy when you've got baby diapers to clean. Right, parents? Second, the flush valve system, as it is almost entirely out of sight, is extremely sanitary. And we cannot stress enough the value of sanitary conditions in the bathroom.

The greatest single drawback of the flush valve system is its noise level. It has been known to wake people sleeping three rooms away! That may be an exaggeration, but, if you have flush valves in your home, you know what we mean.

In any event, flush valves can go awry, and we're here to tell you that they are a breeze to repair. Make use of our diagnostic chart periodically and check to see if any of the symptoms listed apply to

Symptom	Diagnosis	Solutions
Valve will not start to flush.	<ol style="list-style-type: none"> <li>Control stop is shut.</li> <li>Tip of operating stem is worn.</li> <li>Operating stem is too short.</li> </ol>	<ol style="list-style-type: none"> <li>Open control stop.</li> <li>Replace operating stem, now supplied with nylon tip.</li> <li>Install correct length stem, indicated in parts listings.</li> </ol>
Valve starts flushing but closes immediately.	<ol style="list-style-type: none"> <li>Diaphragm is ruptured.</li> <li>Valve contains an oversized bypass orifice (pinhole).</li> <li>Tip of operating stem is worn.</li> <li>Seat guide is loose.</li> </ol>	<ol style="list-style-type: none"> <li>Replace diaphragm. Good preventive maintenance includes simultaneous replacement of auxiliary valve seat supplied in same kit.</li> <li>Install diaphragm with correct bypass size from proper kit. Valves with 3/4" inch supply or smaller use larger orifice sizes than valves with 1 inch supply or larger. Replace auxiliary valve seat at same time.</li> <li>Replace operating stem.</li> <li>Tighten.</li> </ol>
Valve gives too short a flush or too long a flush.	<ol style="list-style-type: none"> <li>Valve needs regulation.</li> <li>Valve contains an oversized bypass orifice (flush too short).</li> <li>Bypass orifice is partially blocked (flush too long).</li> <li>Tip of operating stem is worn.</li> </ol>	<ol style="list-style-type: none"> <li>Remove cover screw. Insert screwdriver and turn regulating screw counterclockwise for shorter flush. If valve is equipped with non-hold open feature, timing must be changed by trial and error of different bypass orifices.</li> <li>Install diaphragm with correct bypass size from kit. Replace auxiliary valve seat at same time. Step 1 above should be tried first.</li> <li>Clean bypass protecting screen. Hold pinhole up to light. If blocked, pinhole may be cleaned with pin, air hose, or acid solution.</li> <li>Replace operating stem.</li> </ol>
Valve continues to run very slowly and makes a hissing sound.	<ol style="list-style-type: none"> <li>Crack in diaphragm seating.</li> </ol>	<p>Replace diaphragm. Good preventive maintenance includes simultaneous replacement of auxiliary valve seat supplied by same kit.</p>

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## Con't Flush Valve Chart

Symptom	Diagnosis	Solutions
Valve continues to run full force or continues to run but only slightly.	<ol style="list-style-type: none"> <li>1. Bypass blocked.</li> <li>2. Foreign object is blocking, closing action.</li> <li>3. Leakage is occurring at the auxiliary valve seat due to foreign objects or wearing and pitting of the auxiliary valve.</li> <li>4. Water pressure and or volume is in sufficient to fill upper chamber of valve and cause valve to close.</li> <li>5. Auxiliary valve head has separated from rod allowing leakage.</li> <li>6. Slight leakage is present at main auxiliary valve seat due to minute foreign objects or very slight wearing and pitting of the auxiliary valve.</li> <li>7. Main valve seat is loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean as indicated in step 3 above.</li> <li>2. Remove foreign object. Smooth any indentations on underside of diaphragm. If diaphragm is mutilated, replace. Valve goes off by itself. Flushing action is not quiet enough.</li> <li>3. Remove any foreign objects from number 8 auxiliary valve seat. Examine seating surface for pitting or cutting. Replace as needed with new auxiliary valve. Replace auxiliary valve seat at the same time.</li> <li>4. Increase pressure and/or volume. If several valves are running at one time, pressure may be built up by shutting off all control stops and then opening them again one by one.</li> <li>5. Replace auxiliary valve and auxiliary valve seat.</li> <li>6. Remove any foreign objects. If diaphragm has been scarred at contact point with main valve seat, replace diaphragm. If main valve seat is scored or pitted, replace. Most valves are equipped with renewable main valve seats.</li> <li>7. Tighten.</li> </ol>
Water splashes from bowl.	<ol style="list-style-type: none"> <li>1. The pressure at the fixture is in excess of that set by the fixture manufacturer as an upper limit.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install a pressure reducing valve in the supply line. Failing this, reduce the volume of water flowing through the flush valve by partially closing the control stop.</li> </ol>
Valve will not pass enough water to satisfactorily siphon bowl.	<ol style="list-style-type: none"> <li>1. Control stop not completely open.</li> <li>2. Seat guide for valves with 3/4 inch supply or smaller has been installed in valve in error.</li> <li>3. Insufficient volume of water is being supplied to valve due to low pressure, undersized piping, or both.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open control stop wide.</li> <li>2. Replace with seat guide for valves with 1 inch supply or larger.</li> <li>3. Establish volume of water available by removing entire diaphragm operating assembly from flush valve, replacing cover, and flushing valve. This converts valve into a simple elbow. If adequate flush still cannot be obtained, water pressure or pipe sizes, or both, must be increased.</li> </ol>

Symptom	Diagnosis	Solutions
Valve goes off by itself.	<ol style="list-style-type: none"> <li>1. Water in upper chamber of valve has been siphoned out by demand from lower levels. When pressure is restored, valve flushes automatically.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install diaphragm with nonsiphon bypass, if available. Increase pressure or replace piping.</li> </ol>
Flushing action is not quite enough.	<ol style="list-style-type: none"> <li>1. High pressure causes abnormally high water in supply system.</li> <li>2. Flush valve is not quiet type.</li> <li>3. Turn-to-silence equipment is not properly adjusted for maximum quietness.</li> <li>4. Localized roaring noise of fixture may be contributing factor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install pressure reducing valve in water supply line.</li> <li>2. Install valve with turn-to-silence equipment.</li> <li>3. To set for minimum flushing noise, open turn-to-silence wide by turning counterclockwise with screwdriver or wheel handle. Trip the valve and note noise level. While valve is running, begin to close stop and slowly turn-to-silence. Depending on inlet pressure at any given fixture, there is one setting of the stop at which water noise will be hushed. If pressure is low, this optimum setting will be near the wide open stop position. If pressure is high, the setting will be near the closed position. The gallonage demands of the fixture must also be satisfied. Adjustment of the regulating screw in the valve cover may be helpful in this regard.</li> <li>4. Make quick test to isolate fixture noise from any valve noise. Place cardboard under toilet seat and cover opening of bowl. Valve noise will then be readily identifiable. If fixture is noisy, install quiet action bowl.</li> </ol>
Valve leaks at handle.	<ol style="list-style-type: none"> <li>1. Handle packing is worn.</li> <li>2. Valve is fitted with old-style spring-loaded handle.</li> <li>3. Flexer has fatigued and ruptured.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten packing nut or replace packing.</li> <li>2. Replace with modern handle.</li> <li>3. Replace flexer to regain new spring and sealing action. Also replace operating stem.</li> </ol>
Water leaks from air vents or vacuum breaker.	<ol style="list-style-type: none"> <li>1. Rubber sleeve has ruptured from fatigue.</li> <li>2. Vacuum breaker is being subjected to excessive back pressure by restrictive urinal or water closet.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace rubber sleeve as in recipe to follow.</li> <li>2. Open up flow control on urinal if such a device is provided. Also, flow rate through valve may be reduced at control stop. If condition persists, contact manufacturer of fixture for corrective action.</li> </ol>