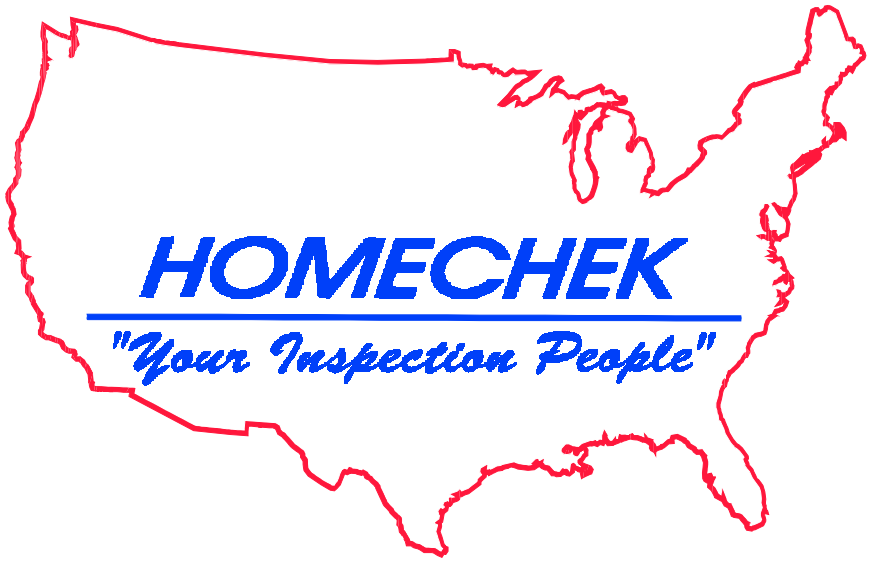

Minor Home Repair and Maintenance Manual

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Section One

Home Maintenance Schedule

Home Maintenance Schedule

Regular Maintenance Is the Key

Inspecting your home on a regular basis and following good maintenance practices is the best way to protect your investment in your home. Whether you take care of a few tasks at a time or several all at once, it is important to get into the habit of doing them. Establish a routine for yourself and you will find the work is easy to accomplish and not very time consuming. A regular schedule of seasonal maintenance can put a stop to the most common — and costly — problems, before they occur. If necessary, use a camera to take pictures of anything you might want to share with an expert for advice or to monitor or remind you of a situation later.

By following the information noted here, you will learn about protecting your investment and how to help keep your home a safe and healthy place to live.

If you do not feel comfortable performing some of the home maintenance tasks listed below, or do not have the necessary equipment, for example a ladder, you may want to consider hiring a qualified handy person to help you.

Seasonal Home Maintenance

Most home maintenance activities are seasonal. Fall is the time to get your home ready for the coming winter, which can be the most grueling season for your home. During winter months, it is important to follow routine maintenance procedures, by checking your home carefully for any problems arising and taking corrective action as soon as possible. Spring is the time to assess winter damage, start repairs and prepare for warmer months. Over the summer, there are a number of indoor and outdoor maintenance tasks to look after, such as repairing walkways and steps, painting and checking your chimney and roof.

While most maintenance is seasonal, there are some things you should do on a frequent basis year round:

- Make sure air vents indoors and outdoors (intake, exhaust and forced air) are not blocked by snow or debris.
- Check and clean range hood filters on a monthly basis.
- Test the ground fault circuit interrupter(s) monthly by pushing the test button, which should then cause the reset button to pop up.
- If there are young children in the house, make sure electrical outlets are equipped with safety plugs.
- Regularly check the house for safety hazards such as a loose handrail, lifting or buckling carpet, etc.

Timing of the seasons varies not only from one area to another, but also from year to year in a given area. For this reason, we have not identified the months for each season. The maintenance schedule presented here, instead, is a general guide for you to follow. The actual timing is left for you to

decide, and you may want to further divide the list of items for each season into months.

Fall

- [ ] Have furnace or heating system serviced by a qualified service company every two years for a gas furnace, and every year for an oil furnace.
- [ ] Open furnace humidifier damper on units with central air conditioning and clean humidifier.
- [ ] Lubricate circulating pump on hot water heating system.
- [ ] Examine the forced air furnace fan belt for wear, looseness or noise; clean fan blades of any dirt buildup (after disconnecting the electricity to the motor first).
- [ ] Turn ON gas furnace pilot light.
- [ ] Check and clean or replace furnace air filters each month during the heating season. Ventilation system, such as heat recovery ventilator filters should be checked every 2 months.
- [ ] Vacuum electric baseboard heaters to remove dust.
- [ ] Remove the grilles on forced air systems and vacuum inside the ducts.
- [ ] If the heat recovery ventilator has been shut off for the summer, clean the filters and the core, and pour water down the condensate drain to test it.
- [ ] Clean portable humidifier, if one is used.
- [ ] Have well water tested for quality. It is recommended you test for bacteria every 6 months.
- [ ] Check sump pump and line to ensure proper operation, and to ascertain that there are no line obstructions or visible leaks.
- [ ] Replace window screens with storm windows.
- [ ] Remove screens from the inside of casement windows to allow air from the heating system to keep condensation off window glass.
- [ ] Ensure all doors to the outside shut tightly, and check other doors for ease of use. Renew door weather stripping if required.
- [ ] If there is a door between your house and the garage, check the adjustment of the self-closing device to ensure it closes the door completely.
- [ ] Ensure windows and skylights close tightly.
- [ ] Cover outside of air conditioning units.
- [ ] Ensure that the ground around your home slopes away from the foundation wall, so that water does not drain into your basement.
- [ ] Clean leaves from eaves, troughs and roof; test downspouts to ensure proper drainage from the roof.
- [ ] Check chimneys for obstructions such as nests.
- [ ] Drain and store outdoor hoses. Close valve to outdoor hose connection and drain the hose bib (exterior faucet), unless your house has frost proof hose bibs.

- [ ] If you have a septic tank, measure the sludge and scum to determine if the tank needs to be emptied before the spring. Tanks should be pumped out at least once every 3 years.
- [ ] Winterize landscaping: store outdoor furniture, protect gardens and young trees or bushes.

Winter

- [ ] Check and clean or replace furnace air filters each month during the heating season. Ventilation system, such as heat recovery ventilator filters should be checked every 2 months.
- [ ] After consulting your hot water tank owner's manual, drain off a dishpan full of water from the clean-out valve at the bottom of your hot water tank to control sediment and maintain efficiency.
- [ ] Clean humidifier two or three times during the winter season.
- [ ] Vacuum bathroom fan grille.
- [ ] Vacuum fire and smoke detectors, as dust or spider webs can prevent them from functioning.
- [ ] Vacuum radiator grilles on back of refrigerators and freezers, and empty and clean drip trays.
- [ ] Check gauge on all fire extinguishers; recharge or replace if necessary.
- [ ] Check fire escape routes, door and window locks and hardware, and lighting around outside of house; ensure family has good security habits.
- [ ] Check the basement floor drain to ensure the trap contains water. Refill with water if necessary.
- [ ] Monitor your home for excessive moisture levels—for example, condensation on your windows, which can cause significant damage over time and pose serious health problems—and take corrective action.
- [ ] Check all faucets for signs of dripping and change washers as needed. Faucets requiring frequent replacement of washers may be in need of repair.
- [ ] If you have a plumbing fixture that is not used frequently, such as a laundry tub or spare bathroom sink, tub or shower stall, run some water briefly to keep water in the trap.
- [ ] Clean drains in dishwasher, sinks, bathtubs and shower stalls.
- [ ] Test plumbing shut-off valves to ensure they are working and to prevent them from seizing.
- [ ] Examine windows and doors for ice accumulation or cold air leaks. If found, make a note to repair or replace in the spring.
- [ ] Examine attic for frost accumulation. Check roof for ice dams or icicles. If there is excessive frost or staining of the underside of the roof, or ice dams on the roof surface, consult a professional for advice.
- [ ] Check electrical cords, plugs and outlets for all indoor and outdoor seasonal lights to ensure fire safety: if worn, or if plugs or cords feel warm to the touch, replace immediately.

Spring

- ☐ After consulting your hot water tank owner's manual, carefully test the temperature and pressure relief valve to ensure it is not stuck. **Caution**:This test may release hot water that can cause burns.
- ☐ Check and clean or replace furnace air filters each month during the heating season.Ventilation system, for example heat recovery ventilator, filters should be checked every two months.
- ☐ Have fireplace or woodstove and chimney cleaned and serviced as needed.
- ☐ Shut down and clean furnace humidifier, and close the furnace humidifier damper on units with central air conditioning.
- ☐ Check air conditioning system and have serviced every two or three years.
- ☐ Clean or replace air conditioning filter (if applicable).
- ☐ Check dehumidifier and clean if necessary.
- ☐ Turn OFF gas furnace and fireplace pilot lights where possible.
- ☐ Have well water tested for quality. It is recommended that you test for bacteria every six months.
- ☐ Check smoke, carbon monoxide and security alarms and replace batteries.
- ☐ Clean windows, screens and hardware, and replace storm windows with screens. Check screens first and repair or replace if needed.
- ☐ Open valve to outside hose connection after all danger of frost has passed.
- ☐ Examine the foundation walls for cracks, leaks or signs of moisture, and repair as required. Repair and paint fences as necessary.
- ☐ Ensure sump pump is operating properly before the spring thaw sets in. Ensure discharge pipe is connected and allows water to drain away from the foundation.
- ☐ Re-level any exterior steps or decks which moved due to frost or settling.
- ☐ Check eavestroughs and downspouts for loose joints and secure attachment to your home, clear any obstructions, and ensure water flows away from your foundation.
- ☐ Clear all drainage ditches and culverts of debris.
- ☐ Undertake spring landscape maintenance and, if necessary, fertilize young trees.

Summer

- ☐ Monitor basement humidity and avoid relative humidity levels above 60 per cent. Use a dehumidifier to maintain safe relative humidity. Clean or replace air conditioning filter, and wash or replace ventilation system filters if necessary.
- ☐ Check basement pipes for condensation or dripping, and take corrective action, for example, reduce humidity and or insulate cold water pipes.
- ☐ Check the basement floor drain to ensure the trap contains water. Refill with water if necessary.

- [ ] If you have a plumbing fixture that is not used frequently, for example, a laundry tub or spare bathroom sink, tub or shower stall, run some water briefly to keep water in the trap.
- [ ] Deep clean carpets and rugs.
- [ ] Vacuum bathroom fan grille.
- [ ] Disconnect the duct connected to the dryer and vacuum lint from duct, the areas surrounding your clothes dryer and your dryer's vent hood outside.
- [ ] Check security of all guardrails and handrails.
- [ ] Check smooth functioning of all windows and lubricate as required.
- [ ] Inspect window putty on outside of glass panes and replace if needed.
- [ ] Lubricate door hinges and tighten screws as needed.
- [ ] Lubricate garage door hardware and ensure it is operating properly.
- [ ] Lubricate automatic garage door opener motor, chain, etc. and ensure that the auto-reverse mechanism is properly adjusted.
- [ ] Check and replace damaged caulking and weatherstripping around windows and doorways, including the doorway between the garage and the house.
- [ ] Inspect electrical service lines for secure attachment where they enter your house, and make sure there is no water leakage into the house along the electrical conduit.
- [ ] Check exterior wood siding and trim for signs of deterioration; clean, replace or refinish as needed.
- [ ] Check for and seal off any holes in exterior cladding that could be an entry point for small pests, such as bats and squirrels.
- [ ] Remove any plants that contact, or roots that penetrate, the siding or brick.
- [ ] Climb up on your roof, or use binoculars, to check its general condition, and note any sagging that could indicate structural problems requiring further investigation from inside the attic. Note the condition of all shingles for possible repair or replacement, and examine all roof flashings, such as at chimney and roof joints, for any signs of cracking or leakage.
- [ ] Sweep chimneys connected to any woodburning appliance or fireplace, and inspect them for end-of-season problems.
- [ ] Check the chimney cap and the caulking between the cap and the chimney.
- [ ] Repair driveway and walkways as needed.
- [ ] Repair any damaged steps that present a safety problem.

Section Two

Home Maintenance, Service Tips and Problems

MECHANICAL SYSTEMS AND APPLIANCES	HOME MAINTENANCE, SERVICE TIPS AND PROBLEMS
Heating Systems Gas, Boiler, Hot Water, Electric and Oil, plus Wood Stoves	✔ All Forced Air Systems: Conventional filters on forced-air systems should be checked monthly and cleaned or replaced as needed. Electronic filters should be checked monthly and cleaned as needed. Care should be taken to ensure the interior components are installed in the correct orientation after cleaning. Noisy blower sections should be brought to the attention of a technician. All types of furnaces and boilers should be inspected by a qualified technician every year to ensure that all the components are operating properly and no connections are loose or burned. ✔ Gas Furnaces and Boilers: If gas odors can be detected, call the gas company immediately. Do not turn on any electrical equipment or use anything with an open flame. Gas furnaces and boilers should be cleaned and serviced annually. The exhaust pipe should be checked for loose or corroded sections. The heat shield (located where the burner enters the heat exchanger) should be checked to ensure that it is not loose or corroded. Burn marks around the heat shield or soot on the front may indicate a draft or combustion problem. A technician should be contacted. ✔ All Hot Water Systems: Radiators and convector's should be inspected annually for leakage (particularly at the valves). Radiators should be bled of air annually, and as necessary during the heating season. Circulating pumps should be lubricated twice during the heating season. Expansion tanks should be drained annually. ✔ Electric Heat: Electric furnaces and boilers should be inspected by a qualified technician every year to ensure that all the components are operating properly and no connections are loose or burned. The fuses or circuit breakers in some electric systems can be checked by the homeowner. Electric baseboard heaters should be inspected to ensure an adequate clearance from combustibles and they are keep clean. Baseboard heaters which have been mechanically dam-aged should be repaired or replaced. ✔ Oil Furnaces and Boilers: Oil systems should be checked by a qualified technician on an annual basis. Oily soot deposits at registers of forced-air systems may indicate a cracked heat exchanger. A technician should be contacted. The exhaust pipe from the furnace or boiler should be checked for loose connections or corroded sections. The barometric damper on the exhaust pipe should rotate freely. The chimney clean out should be cleared of any debris. The oil tank should be inspected for leaks. Soot on the front of the furnace or boiler may indicate a draft or combustion problem. A technician should be contacted. ✔ Wood Stoves: Wood stove chimneys and flues should be checked for creosote build-up and cleaned at least annually (more frequently depending upon use). Clearance to combustibles around wood stoves should be maintained at all times. If there is any doubt about the safety of a wood stove, contact the city building inspector immediately.

Carbon Monoxide Information	✔ Carbon Monoxide: Carbon monoxide is a colorless, odorless, highly-poisonous gas formed by the incomplete combustion of carbon or a carbonaceous material, such as gasoline - http://www.cancer.gov/cancertopics/factsheet/Sites-Types/mesothelioma. Some producers of carbon monoxide (CO) are industrial processes, heating equipment, accidental fire, cigarettes and the internal combustion engine. Generators, candles, and space heaters can all create CO emissions. CO is always produced when natural gas, liquid propane, oil, coal, gasoline or wood are burned; often at dangerous levels. Exhaust gases need to be vented properly to avoid CO accumulation in any living space. If the combustion takes place with excess oxygen in a properly tuned burner, not much CO is produced but improper adjustment or any smoldering fire can produce significant CO emissions. ✔ How much is too much? There are many standards for CO exposure limits. The OSHA standard is 50 parts per million (PPM) in the air as a maximum exposure in the workplace. One PPM is defined as one CO molecule in one million molecules of air. This is about the same dilution as one shot glass of gin in a railroad tanker car full of tonic. The majority of off-the-shelf home CO detectors are designed to alarm at 100 PPM and above, to satisfy current laws concerning home CO alarms. A few home CO meters have digital readouts to show lower levels but they will not alarm at these lower levels. The American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) lists a maximum allowable short term limit of nine PPM of CO. The EPA has set two national health protection standards for CO: a one-hour standard of 35 PPM and an eight-hour standard of nine PPM. From the above standards and guidelines it follows that any CO reading over nine PPM should be investigated and acted upon. ✔ Health Effects: Low-level exposure can cause chronic health conditions from cardiovascular disease to a Parkinson's like illness. The following is an excerpt from the EPA: **"**The health threat from lower levels of CO is most serious for those who suffer from heart disease, like angina, clogged arteries or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. Even healthy people can be affected by high levels of CO. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death. CO contributes to the formation of smog ground level ozone, which can trigger serious respiratory problems. U.S. Environmental Protection Agency, August 17, 2007. ✔ Measuring Exposure: There are portable, digital meters that measure various gases. These *dosimeters* have a digital display of the current level or concentration of CO. If used over time, they can compute the total exposure (over time) in units of ppm-hours. There are guidelines for keeping workplace exposure below 200 ppm-hours for an eight-hour workday. The variables that are typically reported in a dosimeter are the maximum exposure concentration, the time when this occurs, the total exposure and the time-weighted average (TWA). The TWA is the total exposure divided by the time over which the exposure occurs (i.e. the PPM-hours divided by the period of time in hours you collected the exposure data). If the TWA is over 35 PPM for one hour, you are in an environment that exceeds the EPA's national health protection standard. Dosimeters range in price from the low $100s on up. They sometimes include a maximum exposure reading and a total exposure reading. ✔ If at Risk, Act - If you are in CO levels above nine PPM, you can and should attempt to change your environment by opening a window to ventilate the area with clean air or by leaving the area. Bring in fresh air if possible. While a level of nine PPM is not an emergency, you should look for possible sources and cleaner air. Determine the sources of the CO by looking for activities like smoking, burning toast, vehicle exhaust or a campfire. If the levels are over 35 PPM, consider evacuating until the source is determined. If levels are above 125 PPM, call in a professional fire department and evacuate. Find the source and have repairs performed. If a hood is not vented properly as well or if an owner is trying to save money and not running the hood often enough, CO concentrations can build up..

Heating Ducts	Heating Ducts: Have your ducts cleaned at least every 5 to 6 years, this keeps your furnace clean and will increase life expectancy. Make sure your ducts have no cracks or leaks in the ductwork and tape were needed.
Water Heater	Water Heater: Drain tank at least every year and flush it out. Hook a garden hose up to the bottom drain valve. Place the garden hose in a position to allow full discharge of the water through the hose (in the yard or flower bed or the bath tub). Open the drain valve wide open. DO NOT CLOSE OFF THE INCOMING COLD WATER SUPPLY TO THE HEATER. Run the water out of the hose until the water runs clear. Once the water is clear, shut off the bottom drain valve and remove the garden hose. Remove the elements and soak in vinegar, then scrape off scales. Or go to State Industries and Click the Information Central (NEW). and Service Handbooks This service handbook addresses service issues associated with Standard Residential Gas Water Heaters. Includes C-3 Flammable Vapor Technology. http://www.stateind.com/lit/handbooks/STC-080.pdf Many of our current manuals are available on-line for you to download to your computer or to print. Residential Gas - Residential Electric - Expansion Tanks - Commercial Gas - Commercial Electric - Pump Tanks FVIR WATER HEATER CLEANING INSTRUCTIONS - http://www.statewaterheaters.com/cust/FVIRClean1.pdf The only problem with this one is where does one get the “flame arrestor cleaning attachment” for the vacuum cleaner? http://www.reliancewaterheaters.com/lit/media/FlameArrestorScreenCleaning.pdf This one looks more like the one I had before. I shows the brush and calls it a "twisted nylon brush" or "household brush" It's a "Toilet Brush'! May 26, 2006: This is very good reading as far as explanations go about the problem whirlpool water heaters are having. http://www.consumeraffairs.com/news04/2006/05/whirlpool_water_heater.html Read all the way to the bottom.
Electrical System	Electrical System: To prevent power outages, be sure there are not too many appliances plugged into one circuit.

Plumbing System	Plumbing System: Avoid flushing any paper products other than toilet paper down the toilets. Check for corrosion, leaks, and add a clean out compound to system once a year. Polybutylene is a form of plastic resin that was used extensively in the manufacture of water supply piping form in 1978 until 1995. Due to the low cost of the material and ease of installation, polybutylene piping systems were viewed as the "the pipe of the future" and were used as a substitute for traditional copper piping. If you have polybutylene lines click on polybutylene information. How to tell if you have Poly - Exterior polybutylene underground water mains are usually blue, but may be gray or black (do not confuse black poly with polyethelene pipe). It is usually 1/2" or 1" in diameter, and it maybe found entering your home through the basement wall or floor, concrete slab or coming up through your crawlspace; frequently it enters the home near the water heater. Your main shutoff valve is attached to the end of the water main. It is wise to check at both ends of the pipe because we have found cases where copper pipe enters the home, and poly pipe is at the water meter. Interior - Polybutylene used inside your home can be found near the water heater, running across the ceiling in unfinished basements, and coming out of the walls to feed sinks and toilets. Warning: In some regions of the country, plumbers used copper "stub outs" where the pipe exits a wall to gee a fixture, so seeing copper here does not mean that you have poly. Source: polybutylene
Air Conditioning or Swamp Cooler System	Air Condition or Swamp Cooler: Check filters every month. Have annual system maintenance done one month before the air conditioning season begins. Keep the condensing unit free of debris. U.S. Dept. of Energy Source: http://www.energy.gov Starting January 1, 2006 Please type in 13 SEER in search bar and you'll get the information on them.
Humidifiers	Humidifier: Water levels in humidifiers should be checked and adjusted monthly. Interior components should be replaced on an as needed basis. The pad on drum type humidifiers should be replaced annually. The water supply to humidifier should be shut off for the summer months and activated for the heating months. On systems with air conditioning or a heat pump, the damper in the humidifier ductwork should be closed during the cooling season.
Microwave	Microwave Oven: Do not use pans or dishes that are metal or have a metallic trim. Only use mild soap and/or baking soda to clean the interior (abrasive cleaners or scouring pads can damage the lining).

Refrigerator	Refrigerator: Clean the interior shelves, shell and gaskets every 3 months. Once a year, clean the coils on the back or underneath and make sure temperatures is set correctly. Recall - Announced March 21, 2007: Maytag and Jenn-Air Brand Dishwasher Recall: Jenn-Air Cooktops Recall: Single Door, Frost Free Upright Freezers - click here
Range and Oven	Range and Oven: To avoid damaging the burners, do not use extra-large and heavy cooking pots or pans. If you have a self-cleaning oven, do not use any other method to clean it. Recall - Announced March 21, 2007: Maytag and Jenn-Air Brand Dishwasher Recall: Jenn-Air Cooktops Recall: Single Door, Frost Free Upright Freezers - click here
Garbage Disposal	Garbage Disposal: To clean the disposal, push a full tray of ice cubes through it while running cold water. Always remember to run water during use and for at least two minutes after you finish. This prevents stoppages. Jammed Disposal: A disposal wrench is provided with your garbage disposal and will either be in a pouch on the disposal or will be in one of the kitchen drawers. There is a female receptor for the wrench on the bottom of the disposal. You will need to put the wrench in the receptor and turn it counter clockwise until the wrench turns freely. Then press the reset button located at the bottom of the disposal. Your disposal should once again operate properly. If you drop a fork in your disposal, always TURN THE POWER OFF before you fish it out.
Washer and Dryer	Washer and Dryer: Clean the lint screen after each load of clothes has been dried and the unit is empty. To adjust the level of your washing machine, turn the legs clockwise to lower them or counter clockwise to raise them.
Structure or Structural	Foundation Walls: Foundation walls should be checked for evidence of deterioration, dampness and movement. Limited dampness from slow moisture migration can be anticipated with most older foundation walls. This will often result in minor surface deterioration. Semi-annual inspections allow for monitoring of this situation. Cracks and voids should be filled. Filling cracks allows for easy monitoring of movement between inspections. Access hatches should be provided to all crawl space areas. Wood Framing: Exposed wooden structural components in the basement should be checked for evidence of rot and insect infestation. Deterioration usually results in sagging structural components. Wall and Ceiling Surface Cracks: Wall and ceiling surface cracks should be monitored for evidence of significant movement. Minor movement due to normal settling and shrinkage should be anticipated. Door Frames: Door frames should be checked to determine their square-ness. Door frames showing significant movement over a six month period are normally indications of more serious problems. Grading: The grading immediately adjacent to the house should be checked to ensure a slope of one inch per foot for the first six feet away from the house (where practical). Catch basins should be cleaned and tested.

1. Roofs and 2. Gutters plus
3. Leaking and Damaged Downspouts

- 1. Roofing Installation: Most residential roofing consists of Laminate (asphalt) shingles. These can be purchased in 3-Tab, 25, 30 and 40 year shingles. Don't be fooled by the numbers. None of these shingles are going to withstand any type of severe weather in 12 -15 years. However, the thicker the shingle, the more value you are going to get for your buck while they last. Not to mention that a 30 year shingle (which is recommend for 99% of the homes), it is going to be a prettier application and save you some cash compared to the thinner 3 - Tab.
  Cemwood Roof Shakes: American Cemwood was a well known manufacturer of imitation wood shakes. Unfortunately many tend to crack, swell and discolor. Go to their site cemwood roof shake claims updated April 4, 2004.
- 2. Gutters: Gutters are an important part of your home's weatherproofing system. For many homeowners, their gutter system is a secondary concern and often gets neglected. Don't make that mistake! It is important that you maintain a free -flowing gutter system as your gutters prevent rain from running from your roof and falling too close to your house. Flowing water away from your house properly will protect your foundation, keep stains from developing on your siding, and keep walkways ice-free in the wintertime. There are four basic types of gutters available- aluminum, galvanized steel, vinyl and sometimes you will find wood gutters. Galvanized steel gutters, although the least expensive, also require the most attention and maintenance. Also aluminum and vinyl gutters offer the most maintenance-free solution as they are durable and resistant to corrosion.
- 3. Leaking and Damaged Downspout: 1. You will sometimes find that the downspout joints loosen and lose their ability to be watertight. Start by removing the screws holding the joint together or the retaining hardware depending on how yours is attached.
  2. Pull apart the pieces in the joint and use the wire brush to remove any existing caulk on both the outside of the male piece and the inside of the female piece of the joint. 3. Inspect the hardware to be sure that the hardware is not in such condition that it is not reusable. Your downspout might be dented so that it cannot be used or your retaining hardware may be damaged. Replace any pieces that cannot be reused with new material. 4. Apply caulk to the outside of the male piece of the joint, near the end, and reattach the female piece. 5. Secure the joint with screws or other retaining hardware suitable for your gutters.
  6. Leaking gutter sections. If you find a leak at the joint, and there is no apparent damage such as rust or dents, your sealant is most likely the culprit. Try to scrape away as much of the old caulk sealant that is visible. 7. Then, simply apply a joint caulk, such as silicone, to waterproof the joint. 8. Leaking areas within straight gutter are usually due to rusting gutter sections. You can temporarily patch this problem, but the section will most likely need to be replaced within a couple years. To patch the rusted area, first clean the rust away using your wire brush and water. Be sure that you brush away all the rust so that you minimize the potential for the rust to spread.9. Use your putty knife to spread roofing cement onto the clean area and the surrounding areas. Try to keep the patch as flat as possible so that water will run down your gutter properly. If your rusted area is very large or you want to make a more permanent fix, you should replace the entire gutter section or cut out the damaged section and replace it. 10. Replacing a damaged gutter section. There are times when you will have to remove and replace sections of your gutter system that have been damaged by rust or falling debris such as tree branches or ice. Before replacing sections of gutter that are sagging, be sure that it is your gutter, and not the gutter support, which has failed. You should first remove any retaining hardware from the section of gutter that you need to replace. As shown, remove the retainers and connectors. 11. Use a 4x4 block of wood and place it inside the good section of gutter as you cut the bad section out with a hacksaw. This will keep your gutter in good shape while you are cutting and prevent the gutter from twisting as you cut it. 12. Cut out a section of gutter to replace the piece you have cut out of the existing gutter. Cut the replacement section about 2” longer than the section that is being replaced to allow for some overlap. 13. Using your caulk gun, apply roofing cement to the inside of the original gutter and place the new section into place so that it overlaps about an inch on each side. 14. Drill holes appropriate to your rivets into the overlapping sections of the gutter, and securely fasten the sections together with rivets. 15. Replace any retaining hardware that you originally removed, so that the gutter stays in place.

Lead Based Paint	Lead Based Paint: There are many substances that are found in our homes besides air and water. Some of these substances are harmful, but most are not. The amount of any given substance, or even its mere presence, may determine if your home is safe or not. The concentration levels of these substances may determine if you are dealing with an aesthetic issue, a long-term health risk, or an immediate health threat. Each year, millions of people die or become seriously ill due to mysterious illnesses. We believe that many of these illnesses are caused by environmental hazards that cannot be seen, smelled, or noticed. We believe there are five main causes to these illnesses: radon contamination, carbon monoxide poisoning, water contamination, lead-based paint exposure, and mold exposure. Although it's true that paint in older homes and buildings may be lead-based, the truth is that lead-based paints for residential purposes were virtually banned in 1971, and many companies stopped adding lead to their paints long before then. However, if older lead-based paint in your home is deteriorating, it could be hazardous to you and especially to your children. The Problem: Deaths from lead poisoning are now rare, but it is not unusual for a child's blood to contain enough lead to cause intellectual and developmental delay, neurological problems, kidney disease, and anemia. Children absorb 40-50% of the lead that gets into their mouths (adults only 10%). Even small amounts of lead can produce high concentrations in the blood of young children because their bodies are small. Since children's brains are still developing, the effect of lead poisoning can be especially damaging. Today, lead-based paint is the most common source of lead poisoning in children. Over many years, painted surfaces crumble and become common household dust. This dust coats the objects that curious children put in their mouths. Adults can also ingest lead in this way. It is the most common way for the lead in paint to get into a person (and it is reassuring that your dust tested negative). Children will also chew on windowsills or other painted surfaces. Sometimes they will eat old paint chips. Lead is used to make paint to help it last longer. Prior to World War II, heavily lead-based paints contained as much as 40% lead by dry weight. The amount of lead in household paint was reduced in 1950, and reduced even further in 1978. Most apartments and houses built before 1950 still contain paint with high levels of lead, particularly on doors and around windows. Later household paints may test positive for lead, but generally contain much smaller amounts. Action Levels: Paint does contain organic solvents, which are used to form a film that makes the paint both durable and washable. These solvents release fumes that can be irritating to some people; children and pets may be more sensitive than adults. Fortunately, the fumes evaporate and dissipate as the paint dries. To avoid adverse effects from fumes, ventilate the area well while painting and during the drying period. Latex paints have only a small percentage of organic solvents in them (around 4 to 8 percent), but oil-based paints can have a much higher content and consequently will release more fumes. It's probably best not to choose oil-based paints if you're painting in winter. For more information go to - U.S. Environmental Protection Agency - EPA Lead Based Paint.
Asbestos Facts	The word Asbestos is derived from the Greek word meaning "inextinguishable". The Greeks considered Asbestos the Miracle Mineral because it was so soft and pliable and because it was heat resistant. Asbestos has been used commercially since the late 19th century because of its ability to resist heat, electricity and chemical change. Asbestos also has very high sound absorption and tensile strength characteristics. Inhalation of Asbestos can cause Mesothelioma (cancer caused from Asbestos) and Asbestosis (chronic inflammation). Here are some little known facts about asbestos: Building materials being manufactured today still contain Asbestos! Buildings of ANY age may contain Asbestos. There are just a few Asbestos Containing Building Materials that were no banned. It is illegal to improperly disturb Asbestos-containing materials.

Section Three
Appliance Troubleshooting Checklist

DISHWASHER		
The Problem	**Possible Reasons**	**What You Can Do**
You can't get the dishwasher to run.	The door isn't locked. The timer or selector button is in the wrong position. No power is reaching the unit. The door switch is defective. Some wires are loose. The timer is defective.	Relock the door. Check the setting of both the timer and the selector button. Check the fuse box/circuit breaker. Check the door switch for damage. Check all the terminals on both the timer and motor. Replace the timer.
Dishes are still dirty at the end of the wash.	The water isn't hot enough. The dishes are not correctly prepared for washing. The dishes aren't stacked correctly.	First, check the temperature of the hot water from the tap - it should be between 140°F and 150°F. Also check the hot water setting. Scrape and rinse all dishes before loading the dishwasher. Dishes can't touch and must face the direction of the spray to get completely clean.
The dishwashers tub doesn't fill with water.	There is a defect in the water inlet valve or solenoid. The water filter is clogged. The overflow switch has a defect. The timer is defective.	Check the valve. Check to see if your water inlet valve has a filter and clean it. Check the switch. If it freezes in the FULL position, the unit will not fill. Replace the timer.
You can't get the water to stop running.	The water inlet valve is stuck. The timer is defective. There is a defect in the overflow switch.	Check the valve and see if you can shut it. Replace the timer. If the switch is frozen in the EMPTY position, the water will continue to run.
The water isn't draining out of the unit.	There is a kink or a clog in the drain hose. There is a defect in the pump motor. The timer is defective.	Disconnect the drain hose and blow through it to be sure it is clear. Call a qualified contractor. Replace the timer.
The dishes aren't drying.	There are mineral deposits on the heating element. The heating element wire is loose. The heating element has burned out. The timer is defective.	The deposits should come off with vinegar. Check all the electrical connections around the heating element. Replace the heating element. Replace the timer.
Water is leaking out of the dishwasher.	The door seal is damaged. The overflow switch is defective. The door hinges are broken. The heating element nuts are loose. The hose clamps are loose.	Replace the door seal. Check the switch for damage. Replace the hinges. Tighten the nuts that attach the element to the tub. To see if there's a loose hose connection, you may have to move the unit.
The dishwasher is unusually noisy.	The spray arm is hitting the dishes. The water inlet valve is damaged (a knocking sound while the unit fills). There isn't enough water in the tub.	Reload the unit so dishes don't touch the spray arm. Replace the water inlet valve. Stop using other faucets while the unit fills.

GARBAGE DISPOSAL		
The Problem	**Possible Reasons**	**What You Can Do**
You can't turn on the motor or Jammed	There is no power. The on/off switch is defective. The overload protector switch is tripped. The motor has a defect. **Jammed Disposal**	Check the fuse box/circuit breaker. And if the disposal is plugged into a wall outlet, check the wall outlet. On continuous-feed models, check the wall switch. On batch-feed models, check the stopper switch. If the flywheel is jammed, free it. Then push the reset button. Call a qualified contractor. A disposal wrench is provided with your garbage disposal and will either be in a pouch on the disposal or will be in one of the kitchen drawers. There is a female receptor for the wrench on the bottom of the disposal. You will need to put the wrench in the receptor and turn it counter clockwise until the wrench turns freely. Then press the reset button located at the bottom of the disposal. Your disposal should once again operate properly. If you drop a fork in your disposal, always TURN THE POWER OFF before you fish it out.
Motor hums but the unit doesn't grind.	The flywheel is jammed. The motor bearings have frozen.	Free the flywheel. Call a qualified contractor. You'll probably have to buy a new unit.
The disposal continuously blows fuses.	Too many appliances are plugged into the circuit.	Install a 15-amp circuit just for the disposal.
You can't stop the disposal.	The on/off switch is defective.	Call a qualified contractor
The disposal grinds things too slowly.	There is not enough water. There is improper waste in the unit. The shredder ring is dull or the flyweights are broken.	Run more cold water when using the disposal. Only dispose of materials allowed by the manual. Replace defective parts.
The disposal drains slowly.	There is not enough water. The drain line is clogged. The disposal isn't grinding finely enough.	Run more cold water when using the disposal. Don't use harsh chemical agents. Flush with hot water to remove a grease clog, then remove the drainpipe and clean it. Replace a dull shredder ring or any broken flyweights.
The disposal is making an unusual amount of noise.	There is a metallic object in the unit. The mounting screws are loose. A flyweight is broken. The motor is defective.	Inspect the unit and fish out the object with tongs or forceps. Tighten the mounting screws. Replace the broken flywheel. Call a qualified contractor.
There is a leak in the disposal.	The sink connection is loose. The drain connection is loose. The housing gasket is damaged.	Tighten the flanges holding the gasket or replace the gasket. Tighten the drain flanges or replace the drain gasket. Replace the gasket.

TRASH COMPACTOR		
The Problem	**Possible Reasons**	**What You Can Do**
You can't turn on the compactor.	No power is reaching the outlet. The electrical cord is defective. The safety lock is not on. The drawer is open. The motor is overloaded. There is a defective switch. There is a loose electrical connection.	Check the fuse box/circuit breaker. Test the cord and replace it if damaged. Turn on the safety lock. Remove anything that keeps it from closing. Remove the wall plug and allow 10 minutes for the motor to cool. Then check the drive train or drive belt and look for broken gears and worn ram screws.
Unit starts but blows a fuse or trips a circuit breaker.	There are to many appliance on one circuit. A chord or plug has a short circuit. A switch has a short circuit. A motor has a short circuit.	Run the unit on its own circuit. Test the plug and cord continuity. Test the switches for continuity. Call a qualified contractor.
The motor runs but the trash isn't compacted.	The drive chain is loose or broken. The gears or pulleys are loose. The ram is seized up.	Check the chain for problems, then adjust or replace it. Check the gears and pulleys, then tighten or replace them if necessary. The ram screws need lubrication. If the screws are stripped, they must be replaced.
The compactor is unusually noisy.	The drive chain is too loose. The unit needs to be lubricated. Some parts are loose.	Tighten the chain. Lubricate the unit. Check and tighten every bolt and screw.
The unit smells unusual.	The deodorant is empty. The aerosol nozzle on the deodorant is clogged.	Replace the deodorant. Ream the nozzle out with a thin wire.
You can't get the compactor to stop running.	The top-limit switch is defective. There is a defect in the start/stop switch.	Pull the plug and check the switch for continuity. Check the switch and replace it if necessary.
Trash spills out of the unit.	The bag isn't in the right position.	Check the position of the bag and the clips that hold it.
You can't get the drawer to open.	The ram stalled.	Make sure the compactor is plugged in and that the door is completely closed. Then, unplug it and look for a broken belt, chain, pulley, or drive screw.

REFRIGERATOR/FREEZER		
The Problem	**Possible Reasons**	**What You Can Do**
The refrigerator has stopped running, no sound can be heard and the light is out.	There is no power at the outlet. The power cord is damaged.	Check the fuse box/circuit breaker. Check the outlet with a VOM or a lamp. If refrigerator blows fuses, put it on its own circuit. Replace the cord.
The refrigerator has stopped running, the light is on and you hear occasional clicking.	The condenser coils are dirty. The condenser fan is defective (frost-free type) The voltage reaching the unit is incorrect. There is a defect in the thermostat. There is a defect in the compressor.	Clean the coils. Check the fan. Check the voltage with a VOM, then call the power company if it's not between 105 and 125 volts. Test the thermostat and replace it if necessary. Call a qualified contractor.
The refrigerator constantly cycles on and off.	The wrong voltage is reaching the unit. There is a defect in the compressor. The refrigerant is leaking. The condenser coils are dirty.	Run the unit on its own circuit and check the voltage at the outlet. Call a qualified contractor. Call a qualified contractor. Clean the coils.
The refrigerator doesn't cool well or runs all the time.	The thermostat is on the wrong setting. The condenser coils are dirty. The door gasket is damaged. The door sags. There is heavy frost accumulation. The door is open too much. The weather is hot and humid. The light is on inside. The insulation in the door and sides is wet. The room is too warm. The evaporator fan is damaged. The compressor fan is damaged. The defrost timer is defective. The refrigerant has leaked out.	Change the thermostat temperature. Clean the coils. Check the gasket. Straighten the door. Defrost the unit more often. Open the door as little as possible. If the unity runs continuously but cools well, there is no problem. Check the door switch. Open the unit on a dry day and let it dry out. Also, repair or replace cracked door jambs and panels. Move the refrigerator to a cooler place or start cooling the room. Check the fan for damage. Check the timer for defects. Call a qualified contractor.
Frost forms rapidly or the unit does not defrost at all.	The door is open too much. The door sags. The door gasket is damaged. Foods are left uncovered. The drains are clogged. The defrost timer, heater or thermostat is damaged.	Open the door as little as possible. Straighten the door. Test the gasket and replace it. Cover or seal all foods, especially liquids. Open and clean all the drains. Check the timer, heater and thermostat for defects.
The refrigerator makes an unusual noise.	The unit is not sitting level. The drain pan rattles. The compressor mounts are hard or broken. The fan blades are blocked by something.	Adjust the position of the unit. Move the pan so it doesn't touch sides of the unit. Replace the mounts. Check the evaporator and compressor fans for obstructions.
The refrigerator smells unusual.	The drains are clogged. The drain pan is dirty.	Open the drains and flush them. Clean the pan and disinfect it.
Water is leaking underneath or inside the unit.	The drain hose or drain pan is broken. The drains are clogged or the pan is full.	Replace the broken parts. Open the drains or empty the drain pan.

ELECTRIC RANGE		
The Problem	**Possible Reasons**	**What You Can Do**
The range is not working at all.	No power is reaching the range.	Check the fuse box/circuit breaker. If you don't find a problem, call an electrician.
One of the top elements doesn't heat.	The element, wiring, terminal block or switch is defective.	Check each part for continuity and replace it if necessary.
A top element doesn't cook well.	The pan is the wrong size. The element is damaged.	Use flat-bottomed pans that just cover the element. Replace the element.
You can't get the oven to heat.	The element, wiring, thermostat or selector switch has a defect. The time is not set properly. The timer is defective.	Check each part for continuity and replace any that are defective. Reread the instructions and reset it. Replace the timer.
The top rear element doesn't heat.	The oven is in its self-cleaning cycle.	The extremely high power requirement during cleaning may prevent the stove from working.
The oven overheats.	A vent is clogged.	Clean the vent.
The oven doesn't hold the temperature you set.	The door gasket is damaged. The thermostat isn't calibrated correctly.	Replace the gasket. Call a qualified contractor.
The oven lamp doesn't work.	The bulb is burned out. There is a defective switch or wiring to the bulb socket.	Replace the burned-out bulb with the same type of oven bulb. Test the wiring and switch, then replace defective parts.
The timer doesn't work.	The timer hasn't been set correctly. The timer fuse has blown. There are loose connections. The timer is damaged.	Check the instructions and reset it. Check the 15-amp fuse in the timer circuit. Turn the power off and check the timer connections for continuity. Replace the timer.
The oven door won't stay shut.	A hinge or spring is defective.	Replace the defective part.
Condensation forms inside the oven.	The vent is clogged. The door doesn't close properly. The oven doesn't preheat properly.	Clean the vent. If there is an air filter, clean or replace it. Check the gasket and door hinge springs. Preheat the oven with the door ajar.
The accessory receptacle on the control panel doesn't work.	A fuse is blown. The wiring is defective.	Check the 15-amp fuse in the accessory circuit. Check the wiring and replace any damaged wires.
The oven stops self-cleaning.	The door isn't locked. The door switch, wiring or thermostat is defective.	Try starting over again. Call a qualified contractor.

GAS RANGE		
The Problem	**Possible Reasons**	**What You Can Do**
A surface burner doesn't light.	The pilot light is out. The gas isn't on.	Follow the instructions for relighting the pilot on your particular range. Call the gas company.
The pilot flame doesn't remain lighted.	The pilot port is clogged. The range is in a drafty place.	Use a small wire to clean the port. Try to prevent drafts near the range.
A burner is burning erratically.	The burner is clogged. There is an incorrect mixture of gas and air.	Clean the burner parts. Call the gas company.
The oven stops lighting.	The oven pilot light is out. There is s defective thermocouple. The gas isn't on.	Follow the instructions for relighting the pilot on your particular range. Replace the thermocouple. Call the gas company.
The oven heats poorly.	There is an incorrect mixture of gas and air. The safety thermocouple is defective.	Call the gas company. Replace the thermocouple.
Things bake unevenly in the oven. The oven overheats.	The door gasket is damaged. The exhaust vent is clogged. There is a defect in the thermostat.	Replace the gasket. Clean the vent. Call the gas company.
The burners are producing soot.	There is an incorrect mixture of gas and air.	Call the gas company.
The burners make an unusual noise.	There is an incorrect mixture of gas and air.	Call the gas company.
You smell gas.	The pilot is out. The gas line is leaking.	Ventilate the room and relight the pilot. Call the gas company. Ventilate the room, extinguish all flames and don't turn on any electric switches.

GAS WATER HEATER		
The Problem	**Possible Reasons**	**What You Can Do**
There is no hot water.	The pilot light isn't lighted. The pilot light won't keep burning. There is a clog in the burner. There is a defective thermocouple. The gas is not coming out.	Carefully relight the pilot. Make sure the gas controls are completely turned on. Then, check the thermocouple and be sure it is firmly connected to the gas control unit and positioned near the pilot flame. Call a qualified contractor. Replace the thermocouple. Call the gas company.
There isn't enough hot water.	The thermostat isn't correctly set. The thermostat is defective. Hot water pipes are exposed. The water tank is too small. There is a clog in the burner. Sediment has formed in the tank. The hot water faucets are leaking.	Turn the thermostat higher. Call a qualified contractor. Insulate the hot water pipes. Install a larger water tank. Call a qualified contractor. Turn off the gas and drain the tank. Repair or replace the faucets.
The water heater is very noisy.	Scale and sediment have formed in the tank.	Turn off the gas and drain the tank.
The water is too hot.	The thermostat is on the wrong setting. There is a thermostat defect. The exhaust vent is blocked by something.	Reset the thermostat. Call a qualified contractor. Check the vent and clear it.
Water is leaking from the heater.	There is a leak in the drain cock. The safety valve is leaking. The tank has a hole in it. There is a leak in the plumbing connection.	Close it tightly or replace it. Gas water heater has a wide vent pipe at the top of the unit. Turn off the water supply by turning the cold water supply valve above the unit clockwise until it stops, (or turn off the main water valve to your house). Check the water temperature. If it's too hot, the thermostat may be broken. If the safety valve is defective, replace it. Buy a new water heater. Call a plumber.

ELECTRICAL		
The Problem	**Possible Reasons**	**What You Can Do**
You can't get the lights or the outlet to work.	No power is reaching the fixtures or outlets.	Check the fuse box/circuit breaker and make sure everything is fully set to the on position or the fuses aren't blown. Check for an overload - too many appliances plugged into one circuit. Unplug all appliances and reset the breaker. Check the GFI outlet and reset it if it is tripped.

ELECTRIC WATER HEATER		
The Problem	**Possible Reasons**	**What You Can Do**
There is no hot water.	The heater has no power. The safety thermostat has quit working. There s a defect in the heating thermostats. There is a defect in the heating elements. Rust, scale or sediment have accumulated in the tank or pipes.	Check the fuse box/circuit breaker. If the heater repeatedly blows fuses, call an electrician. Push the reset button. Test the heating thermostats and elements. Test the thermostats and replace them if necessary. Test the elements and replace them if necessary. Drain & flush out the drain and pipes.
The hot water supply is too low.	The thermostat is set wrong. The tank is too small. Heat is getting lost in the pipes. There is a defect in the heating element. The hot water faucets leak.	Turn the thermostat to a lower temperature. Install a larger heater. Move the heater nearer to the point of use if possible and insulate the water pipes. Test the element, then replace it. Repair or replace the faucets.
The water temperature is too high.	The thermostat is on the wrong setting. There is not enough insulation around the thermostats. The elements are defective. The thermostats are defective.	Turn the thermostat to a lower temperature. Pack the insulation more tightly around the thermostats. Test the elements, then replace them if necessary. Test the thermostats, then replace them if necessary.
There is a water leak.	The gasket or seal on the element is defective. There is a defect in the safety valve. The tank is rusted through. The plumbing connection leaks.	Check and replace the gasket or seal. The water heater has an AC power cable at top, no wide vent. Turn the power switch off (or use the circuit breaker). Turn off the water supply valve above the unit clockwise until it stops. (or turn off the main water valve to your house). Check and replace the safety valve. Buy a new water heater. Call a plumber.
The heater becomes unusually noisy.	Rust, scale or sediment has accumulated in the tank. Scale has formed on the elements.	Drain the tank and flush it out. Remove the elements and soak them in vinegar, then scrape off the scale.
Your hot water is rusty or discolored.	Rust or sediment has accumulated in the tank. Scale has formed on the elements. The water pipes are corroded.	Drain the tank. Remove the elements and soak them in vinegar, then scrape off the scale. Have a plumber replace the pipes.

CENTRAL AIR CONDITIONING		
The Problem	**Possible Reasons**	**What You Can Do**
Water leaks into the walls or ceiling.	The drain hose from the condenser pan is clogged (in attic installations).	Make sure the hose is able to empty the water.
The unit constantly cycles on and off.	There may be something clogging the evaporator unit or blocking the fan.	Clean out the evaporator unit.
The air conditioner doesn't get cool enough.	The condenser coil is dirty. There is direct sun on the evaporator unit. The insulation has fallen off the feed line.	Clean any debris from the condenser unit so air can circulate freely around the fins. Create shade for the unit. Secure the insulation firmly to the line and replace any worn-out insulation.

GAS FORCED AIR AND HEAT PUMP		
The Problem	**Possible Reasons**	**What You Can Do**
There is no heat at all.	The power is out. The blower belt is broken. The blower motor is broken.	Check the fuse box/circuit breaker. Replace the belt. Call a qualified contractor.
Your rooms aren't warm enough.	The filter is dirty. The registers are dirty. There are leaks in the ducts. The heat exchange is dirty. The ducts are blocked. The blower belt is loose. The blower is slow. The register is closed. The duct damper is in an incorrect position.	Replace the filter. Clean the registers. Seal the ducts with duct tape. Call a qualified contractor. Remove any visible obstructions. Tighten the blower belt. Call a qualified contractor. Open the register. Adjust the dampers.
Soot collects in your house.	The filter is dirty. The heat exchange is damaged. The ducts are dirty.	Replace the filter. Call a qualified contractor. Have a professional clean them.
The blower makes unusual noises - noticeable when the burner is off.	The pulley is loose. The blower mounts are worn. A worn belt. The belt tension is too high. The blower bearings need oil.	Tighten the setscrews. Put in new blower mounts. Replace the belt. Loosen the belt tension. Oil the bearings.
You turned on the furnace for the first time one morning, It smelled so bad you are worried it was carbon monoxide or something else was wrong.	Is this normal?	The odor is normal because dust collects on the heat exchanger over the summer, and turning it on for the first time simply burns the dust off. Carbon monoxide is odorless, so you could not smell it. Homeowners should install a good carbon monoxide detector to make sure none of this deadly poison is present in their homes. When you turn on your furnace for the first time leave the windows open to dispel the odor quickly. This is also the ideal time to schedule a maintenance appointment to make sure your furnace will work properly when you need it.
The home we just purchased has a heat pump and it doesn't seem to warm up as quickly as our previous house which had a gas furnace.	Is this normal?	A heat pump is simply an air conditioner with the ability to reverse the flow of refrigerant (freon), and gas furnaces are simply more efficient than air conditioners. If your thermostat is set at 70-degrees, your heat pump will discharge air at approximately 20-degrees above thermostat setting while a gas furnace produces approximately 40-degrees hotter air, naturally warming the area much faster.

SEPTIC TANK CLEANING		
The Problem	**Possible Reasons**	**What You Can Do**
If your home is served by a septic system, to eliminate pump outs, maintain the system properly and cure problems such as backups, wet spots, odor, etc.	Today modern detergents and bleaches destroy the bacteria and enzymes necessary for breaking down and liquefying all waste matter in your septic tank.	Try Clean Aid - **Septic Tank Cleaner.**

MOLD, ASBESTOS PROBLEM AND DISASTER RESTORATION		
The Problem	**Possible Reasons**	**What You Can Do**
If your home has mold, what you need to know about it or you have asbestos in your home or do you have chronic health problems? Allergies, Chronic Fatigue, congestion, Depression, Ear Aches, Flu symptoms, High Fever, Pain in Joints, Sleep Loss, Hallucinations, Skin Erosions, fungal nail Growth, Headaches and many , many more...	First, mold should be respected, not feared. Over the past few decades changes in building practices in response to energy concerns have resulted in "tighter" buildings. And, tighter buildings mean an increased potential for inadequate ventilation. Buildings that can't "breathe" can't dilute indoor pollutants - like mold contained in the building. Due to increases in health problems associated with indoor air quality, researchers discovered that mold exposure is a potential cause of a variety of health effects, including allergy reactions. If you have had a flood, sewer back up, leaking pipes, a leaking roof, or windows, you should probably have you home checked.	**1. KK Environmental Services, Inc. Asbestos and Mold Help - KKES Information or Call (720) 876-0808.** **2. National Mold Institute or Call (303) 531-6133 you can also get a FREE Mold Inspection.** **3. Or Inspecting Commercial, Industrial and Residential for causation of mold related issues and concerns. You can find more information regarding advanced mold inspections at Advanced Mold Inspections, plus mold information from the US Government Environmental Agency: Mold Information.** **Complete Basement - Complete Basement Systems Prevent mold, reduce humidity, odors, bugs, and dust, plus a member of Troubleshooter.com.** COMPLETE BASEMENT SYSTEMS, INC is a member of the largest nationwide network of Foundation Repair and Basement Waterproofing specialists in the US or call (303) 994-2759.
Disaster Restoration	Fire and water damage repair are highly specialized areas that require professional attention. The Disaster Restoration, Inc. staff regularly undergoes intense training and education to master an understanding of toxic residues, pathogens, allergens, asbestos, fuel oil and other hazardous materials as well as waterborne pathogens. As a result, Disaster Restoration, Inc. guarantees customers a safe and effective fire and water damage restoration and cleanup. Fire and the water damage that accompanies it, can occur at any time in a commercial or residential property. When it does, you need reliable restoration and cleanup help fast. Just one call to us assures a complete and technically proper cleanup and remediation. We provide immediate alleviation to fire, smoke, and water damage in order to minimize the long-term effects and expense of delays.	DRI Disaster Restoration Inc or call (303) 657-1400 or 1 (800) 457-fire

Section Four

Common Roof Leak Problems

Roof Leak - Ten Most Common Leak Locations

By Tim Carter

Summary: A roof leak is a major nuisance for most homeowners. Finding a leak can be frustrating or relatively simple, depending on location and weather conditions. Leak detection may go easier with these tips for locating a water leak and roof leak repair.

Ten Most Common Roof Leak Locations

Roof leaks are a nuisance for many homeowners. They can be difficult to diagnose - that is a fact. To make matters worse, different weather conditions will produce leaks in different locations.

The vast majority of roof coverings operate using the principal of gravity. This can be a big help in locating a leak source. However, horizontal roof boards can trick you. A leak may actually be eight to 10 feet sideways from where you see the wet ceiling or spot in the attic.

Finding the source of some leaks is easy. Others will require detective work and possibly a garden hose and an inside spotter. If you don't feel comfortable on a roof, you will have to find an honest roofer to assist you. Sometimes this can be as hard as finding the smallest leak! Here are some tips that may help you find a pesky roof leak:

The Field of Shingles

If your roof is older, it is possible that the leak is within the roof field. This means the expanse of shingles, slate, shakes, whatever. If your roof is asphalt, then you can walk around with ease. Other materials such as slate, concrete tile or clay tile may not be so forgiving. You can crack roofing if you walk on it, so be careful. With regular shingles, look at the tops of the vertical knockouts. Look for missing colored granules. Look for cracks. Possibly a nail has backed itself out of the roof sheathing. Simply take your time and hunt.

Valleys

A valley is a line where two roof planes intersect. Here in Cincinnati we use a metal flashing in the valleys. Some areas use rolled roofing. Other places simply lace the shingles together. Valleys can be big problems if you do not trim the shingles correctly. When you trim a shingle for a valley you end up with a chisel point on the end of the shingle. If a second cut is not made to make this point like an arrow point, then water can travel along the top of the shingle and find its way inside your house. The shingle wrapper tells you how to make this simple second cut.

Head Wall Flashings

Some roofs stop at a vertical wall. A metal flashing must be in place to direct water streaming down the wall away from the stopping point of the shingles. This flashing may be behind wood siding or in front of a brick wall. The flashing should extend over the shingles at least three inches. If the wall is brick or other masonry, the flashing must bend and extend one inch into a mortar joint. Tar, caulk or roofing cement should never be used in conjunction with these materials. If you see them, it is a sign that someone tried to patch a leak!

Wall Step Flashing

Some roof leaks happen at step flashings. You find these flashings where a roof climbs alongside a vertical wall. As each row of shingles is laid, a step flashing is installed over the shingle next to the wall. Part of the flashing turns up on the wall and the other portion gets covered by the next row of shingles. Look for rust or holes in these flashings. In reality, if all is well, you will be able to see only the smallest portion of these flashings.

Chimneys

These devils are the source of many a leak. Chimneys contain four different types of flashing. All must be right or you will have a leak. Plus, the counterflashing that goes into the brick mortar joint must be right. A hairline crack above the flashing can allow vast amounts of water to run behind the flashings. Look for soldered corners of flashing that might have broken or have holes. Do not use caulk to repair these flashings!

Plumbing Vent Flashings

Newer vent flashings are a concern of mine. Many of these incorporate a rubber seal with an aluminum flashing. The rubber can fail in as little as 10 to 15 years. Look for cracked rubber around the plumbing pipe. The flashing should dive up and under the shingles that extend up roof from the middle of the plumbing vent. The bottom half of the flashing should be exposed and actually cover the shingles.

Furnace or B-Vent Flashing

These flashings are basically identical to plumbing vent flashings. However, they sometimes have a metal storm collar. These simply fit tightly around the vertical pipe that exits the roof. If they become loose, the storm collars can cause leaks.

Ice Dam Leaks

Ice dam leaks plague people in the snow belt. These leaks can happen even if everything on your roof is just fine! Ice dams block the natural flow of water down a roof. The water begins to back up under flashings, shingles, tar paper, etc. Once water begins to flow into the house, it can drip for days. The only means of prevention is to install membranes under the roofing. The membranes won't stop the ice but will stop water leaks if installed properly.

Wind Blown Rain Leaks

Wind driven rain can also be a major problem. Once again, you could actually have a good roof and wind will drive water up and under your roofing materials. The only lines of defense are tar paper and the ice dam membranes.

If you have metal valleys, you may want to hem the edges. This means that the hidden edges of the valley actual have a 180 degree bend. This creates a channel that directs wind blown rain back to the bottom of the valley.

Roofing cement under shingles on the edges of roofs that face the wind are also a good idea. Don't underestimate the power of a 70 mph sustained wind-driven rain.

Non-Roof Leaks!

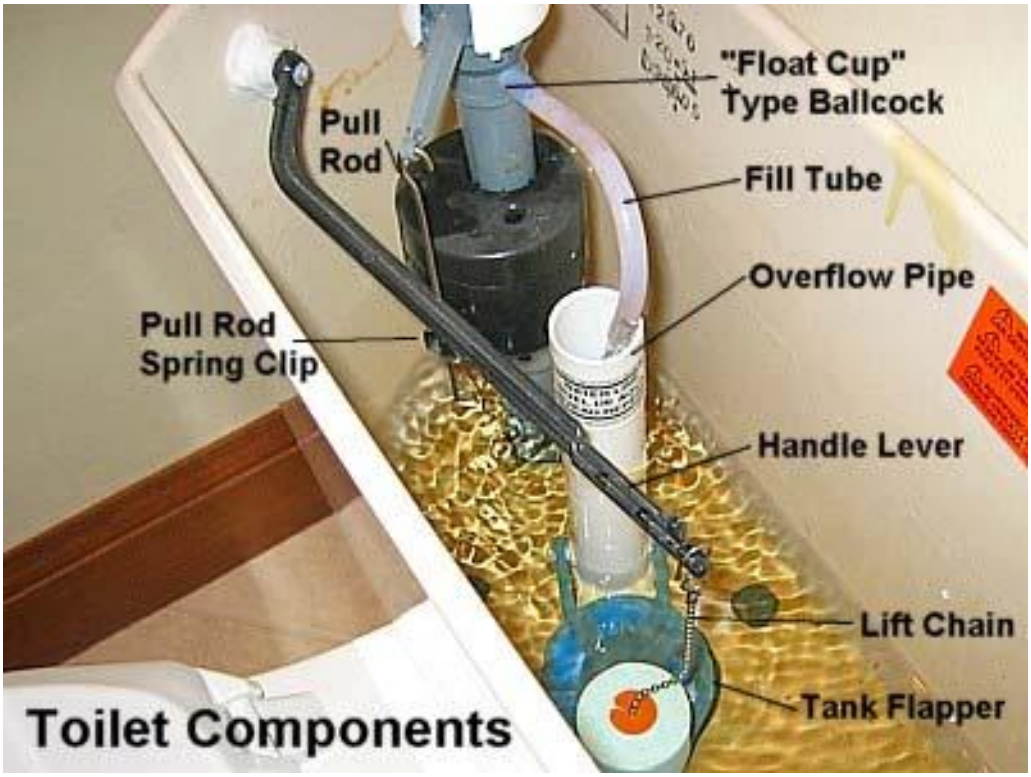
Sometimes you think you have a roof leak when in fact the roof is fine. Attic condensation is a prime example. High humidity can cause condensation and "rain" to fall in your attic. It can also make the underside of the roof sheathing look wet. You think you have a leak instead.

Chimney crowns can develop cracks. The inside surface of the chimney gets discolored or the plaster bubbles. You think a roof leak is the cause.

Siding can be missing above a roof. This can cause water to enter behind head flashings. Be a good gumshoe and snoop around for the leaks!

Section Five

Common Toilet Problems



Toilet Tank Components

The toilet tank is where all the major plumbing takes place in a toilet. The purpose of the tank is to contain the water needed to flush the toilet and to conceal the plumbing apparatus that fills and empties the tank.

Open any two toilet tanks and you'll often find very different components inside. Why? Well new technologies and materials have evolved over the past several decades, but in the end, there are just two major components with several variations. The two major components are:

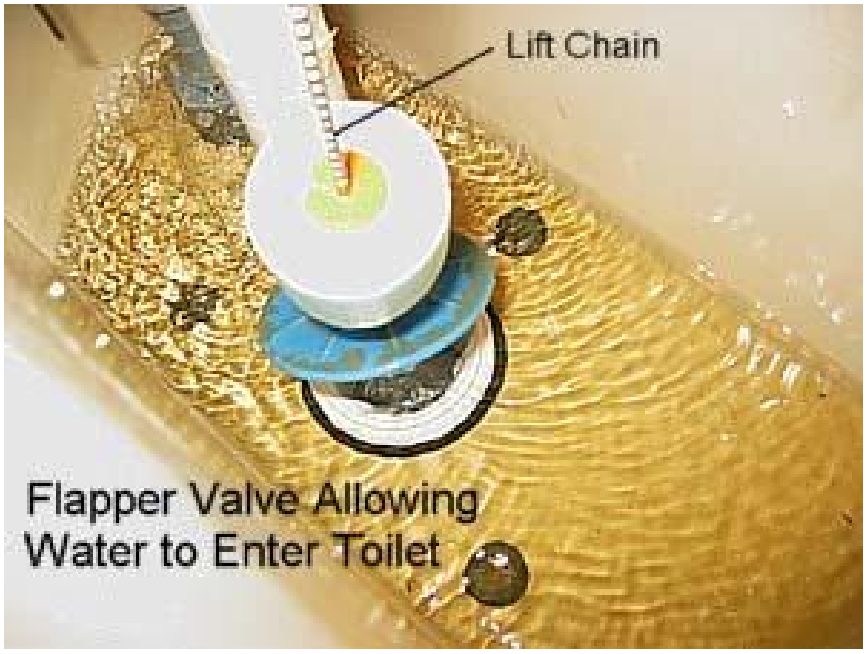
- Ballcock, and
- Flush valve

The Ballcock is the mechanism that fills the tank with water. It comes in four types or variations:

- Plunger Valve Type
- Diaphragm Type
- Float Cup Type
- Floatless Type

The Flush Valve is what releases the water stored in the tank, closes the flow of water into the toilet and allows the tank to refill for the next use. It is the assembly that bolts to the bottom of the tank and includes the overflow pipe and the valve seat. The flush valve has two common variations used to seal the valve seat:

- Tapered Rubber Float Ball or
- Flapper Ball (tank flapper)

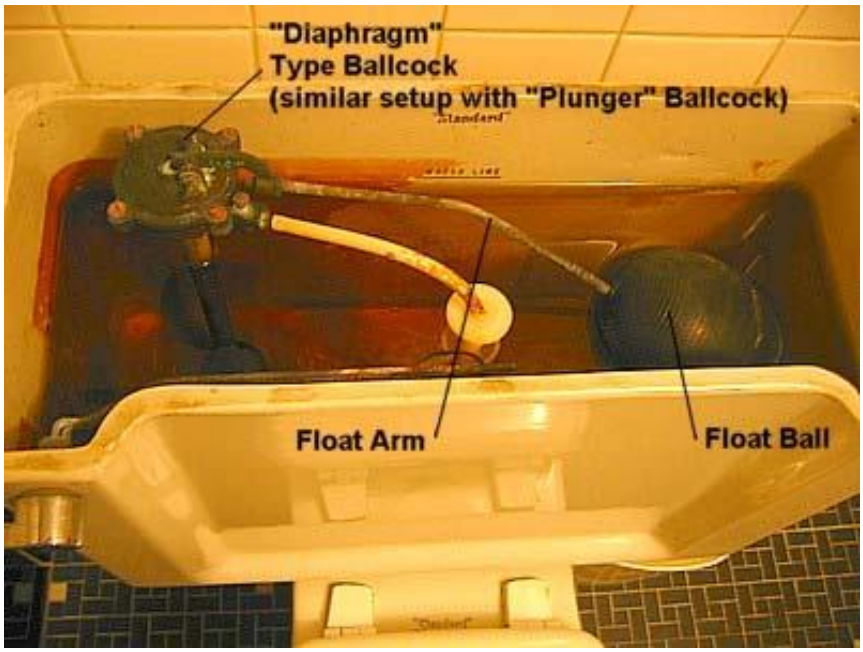


Flapper Ball

The flush valve can use a tapered rubber float ball or a flapper ball to control the flow of water into the toilet.

Flapper balls are common on newer flush valves and are connected to the handle lift arm with a lift chain.

Float balls are more common on older style flush valves and are designed to lift and drop into the valve opening. The float ball is connected to the handle lift arm by a lift wire that runs through a guide arm attached to the overflow pipe.



Toilet Tanks With Float Balls

Two types of ballcocks have been around the longest. They are the plunger valve and diaphragm type ballcocks.

The float ball and plunger or diaphragm ballcock combination have been used in toilets for many decades. The float ball is hollow and floats on top of the water as it is being filled in the tank. When the water gets to the desired level, the float ball moves the float arm and turns off the water flow in the ballcock. By bending the float arm you can "fine tune" the point at which the water turns off and stops filling the tank.

Problem: Toilet Runs Constantly

Possible Solutions:

- Lift chain is disconnected from handle lever or is kinked preventing the flush ball or flap from properly seating
- Lift wire is kinked or binding
- Float ball is rubbing on side of tank
- Plunger or diaphragm type ballcock is not shutting off completely. Bend float arm to push float ball more into water.
- Water level in tank is too high and water is running into overflow pipe. Adjust water level in tank.
- Flush valve not sealing. Inspect tank ball or flapper ball and replace if worn or soft.
- Make sure tank ball lift wire is straight and that tank ball is dropping onto the center of the flush valve opening.
- Replace leaky float ball.
- Replace faulty ballcock.

Problem: Toilet Handle Loose

Possible Solutions:

- Reconnect lift wire or lift chain from handle, it is disconnected.
- Adjust handle mounting nut inside tank. It has reverse threads so rotate counterclockwise to tighten.

Problem: Water on Floor

Possible Solutions:

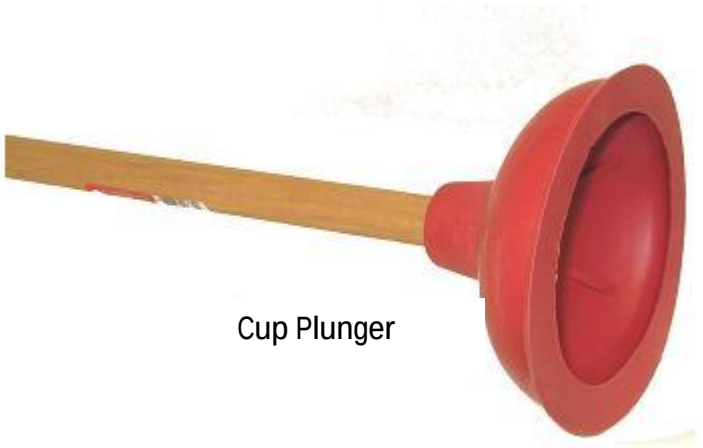
- Tighten loose water connection to tank.
- Tighten tank bolts.
- Condensation is forming in summer, insulate inside of tank.
- Replace wax ring in toilet base.

Problem: Toilet Clogged

Possible Solutions:

- This repair will require either a ball or flange plunger or possibly a water closet auger.
- See the tutorial How to Unclog a Toilet.

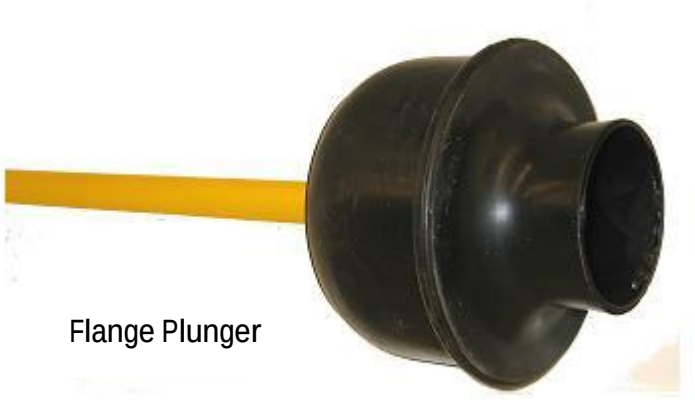
How to Unclog a Toilet



Cup Plunger

There are two basic types of plungers. The "cup" plunger and the "flange" type plunger. The cup plunger is what most people have in their homes and is designed for creating a seal against a flat surface such as the bottom of a sink or bathtub.

Toilets however have a bowl shape and cup plungers don't work because they lose their seal when you pull up. For use with toilets, you need the Flange Plunger.



Flange Plunger

The special bowl shape of a toilet requires a special plunger shape. And that shape is reflected in the flange plunger or a similar one called a ball plunger. Both these plungers have a specially shaped bottom designed to seal the opening in the bottom of a toilet bowl and maintain the required vacuum and pressure during the plunging action.

Once you see that the toilet is draining slowly or is stopped up, do not flush it again. It's time to use the flange plunger. Gently push the plunger through the water allowing air to escape from the plunger body. Once the plunger is sealed around the drain outlet in the bottom of the bowl, plunge up and down rapidly until the clog is broken and the water level seems to drop.

Next, you have to test to see if the toilet will drain.

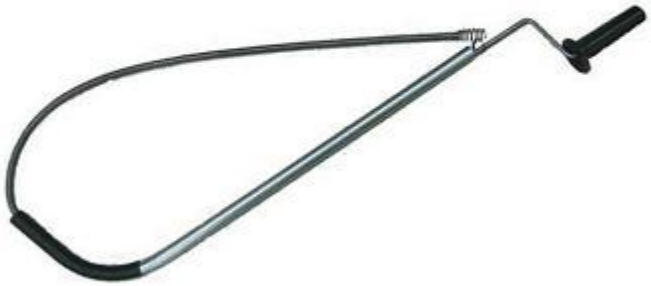
You want to test and see if the toilet will drain once you think you've cleared the clog, but don't do this by flushing the toilet again until you're sure the clog is removed. To test for drainage you have to add water. This can be done one of two ways.

The first way is to slowly pour water into the toilet as from a bucket.

The second way is to open the toilet tank lid and SLOWLY lift the flapper seal at the bottom of the tank until water begins to enter the bowl. Do not lift the flapper all the way up or else the toilet will flush.

If water goes down the toilet easily, the clog is cleared. If not, then try again by repeating the previous step and this step a time or two more.

If repeated attempts to clear the clog fail, then move on to the next step "Use the Closet Auger."



The water closet auger is commonly called a closet auger or toilet auger. It's a special tool that has an offset hand crank, a long sleeve handle and a special auger bit at the end to break through a clog or retrieve an obstruction like a rag. The auger bit is connected via a flexible shaft to a crank handle that you control. Its reach is about 3 feet. Here's how you use this tool.

- Some toilet bowls drain to the front, some to the rear. Whichever way yours drains is the direction you want the curved end of the auger handle pipe to face.
- Leave about 4" to 6" of cable between the drain hole and the end of the curved handle pipe, then tighten the set screw.
- Push the flexible cable into the drain and crank the auger clockwise until it stops then push forward.
- The auger may feel like it grabbed something or it may just break up the clog. If it feels like it grabbed something, pull it out to check. If it gets stuck, gently turn the crank back and forth or push and pull the tube, but never force the auger or you may break the toilet porcelain.
- After breaking up the clog use the plunger again to make sure the obstruction is cleared.
- Once you're sure it's OK, flush the toilet.

Section Five

Home Safety Checklist

Home Safety Checklist	Yes	No	Do Not Know	Does Not Apply
Living Room and Family Room				
1. Can you turn on a light without having to walk into a dark room?				
2. Are lamp, extension or phone cords out of the flow of foot traffic?				
3. Are passageways in this room free from objects and clutter (papers, furniture)?				
4. Are curtains and furniture at least 36 inches from baseboard heaters or portable heaters?				
5. Do your carpets lie flat?				
6. Do your small rugs and runners stay put (don't slide or roll up) when you push them with your foot?				
Kitchen				
7. Are your stove controls easy to see and use?				
8. Do you keep loose fitting clothing, towels, and curtains that may catch fire away from the burners and oven?				
9. Can you reach regularly used items without climbing to reach them?				
10. Do you have a step stool that is sturdy and in good repair?				
Bedrooms				
11. Do you have working smoke detectors on the ceiling outside of bedroom doors?				
12. Can you turn on a light without having to walk into a dark room?				
13. Do you have a lamp or light switch within easy reach of your bed?				
14. Is a phone within easy reach of your bed?				
15. Is a light left on at night between your bed and the toilet?				
16. Are the curtains and furniture at least 36 inches from your baseboard heater or portable heater?				

Bathroom				
17. Does your shower or tub have a non-skid surface, such as a mat, decals, or abrasive strips?				
18. Does the tub/shower have a sturdy grab bar (not just a towel rack)?				
19. Is your hot water temperature set to 120 degrees or lower?				
20. Does your floor have a non-slip surface or does the rug have a non-skid backing?				
21. Are you able to get on and off the toilet easily?				
Stairways				
22. Is there a light switch at both the top and bottom of the inside stairs?				
23. With the light on, can you clearly see the outline of each step as you go down the stairs?				
24. Do all stairways have sturdy handrails on both sides?				
25. Do handrails run the full length of the stairs, slightly beyond the steps?				
26. Are all the steps in good repair (not loose, broken, missing or worn in places)?				
27. Are stair coverings (rugs, treads) in good repair, without holes and not loose, torn or worn?				

Hallways and Passageways				
28. Do all small rugs or runners stay put (don't slide or roll up) when you push them with your foot?				
29. Do your carpets lie flat?				
30. Are all lamp, extension and phone cords out of the flow of foot traffic?				
Front and Back Entrances				
31. Do all entrances to your home have outdoor lights?				
32. Are walkways to your entry free from cracks and holes?				
Throughout Your House				
33. Do you have an emergency exit plan in case of fire?				
34. Do you have emergency phone numbers listed by your phone?				
35. Are there other hazards or unsafe areas in your home not mentioned in this checklist that you are concerned about?				

Making Your Home Safer: What home safety changes do you want to make?
1.
2.
3.