TECHNICAL SERVICE DEPARTMENT
Technical Service Bulletin
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Plumbing Cross-Over
Pluming Cross Connection

A plumbing cross over is a condition whereby cold water is allowed to flow into the hot water system. The plumbing system in a home is divided into two sub-systems, the hot water supply and the cold water supply.

The modern home, or a remodeled older home, will most likely have at least one mixing or single handle type faucet installed. Most homes today have an automatic laundry washing machine. Both of these are examples of appliances and fixtures that have a mixing valve. Any mixing valve can allow a cross-over to occur should they become defective. A defective mixing valve will allow a cross-over of hot and cold water, even though there are no visible signs of trouble or leak.

A plumbing cross-over can cause a complaint such as 'water not hot enough'. Testing the hot plumbing system for a cross over can be accomplished by using the following procedure:

1. Close the cold water shut off valve supplying cold water to the heater.
2. Using a faucet with separate HOT and COLD spigots, open the hot faucet only.
3. With the cold water to the heater shut off, once the pressure is relieved, the water should stop running completely. Should the water continue to flow, but at a slower than normal rate, you have one of two conditions. If the slower flow continues but stays HOT, the cold water shut off valve is defective and the test will not be valid. Replace the cold water shut off valve and continue the test. If the water turns COLD, you have cold water crossing over to the hot water plumbing system.
4. To locate the cross-over, first shut off the hose bib (service valves) to the laundry washer. If the water stops flowing at your hot faucet, the washing machine mixing valve is causing the cross-over.
5. If the flow does not stop, then you must check, by feel, each of the feed lines to each of the single handle faucets. If you find one faucet where both feed lines are equally cold, that faucet is allowing an internal cross-over to occur and should be rebuilt or replaced.
6. If none of the above resolve the cross-over, a direct cross-over exists in the plumbing somewhere. This means the hot water sub-system and the cold water sub-system are directly tied together after the water heater.

When performing this test in a home that has only mixing (single spigot) faucets, the test must be done twice. Each test must be done using a different faucet. The faucet used for the first test may be causing the problem and should be tested in the off position. In a house with all double handle faucets, you may find a shower head with a built in shut off (shut off valve is connected directly to the shower head). If the user shuts the shower head valve off but leaves the double handle tub facets open, this would allow a direct cross-over to occur.