

# TECHNICAL BULLETIN

## BULLETIN 42

### UNDERSIZING

<b>SYMPTOMS</b>	<ul style="list-style-type: none"><li>• Heavy condensation</li><li>• Rust chips on the burners and flue tubes</li><li>• Not enough hot water</li><li>• Premature tank failure(s)</li></ul>
<b>GENERAL</b>	<p>Water heaters can often fail prematurely (especially in commercial applications) due to improper sizing. The storage capacity as well as the recovery rate are both important factors when sizing a water heating system. Improper sizing can also lead to complaints of not enough hot water and sometimes even health violations. It is important to consider not only the volume of water required, but the temperature that is required. Some systems are designed for higher sanitizing temperatures while others are not.</p> <p>When a large volume of water is needed within a small amount of time, this water is generally supplied from storage. This volume is referred to as the dump load. When choosing the appropriate storage tank size, the actual and usable storage will need to be addressed.</p> <p>If water is required at a certain gallon per minute rate, this water will generally be supplied by the recovery of heater. Keep in mind that any dump loads also need to be included in this recovery.</p>
<b>EFFECTS</b>	<p>When a water heater is properly sized, some condensation will occur. However, excessive condensation is not normal and will corrode the heater. The flue tubes, baffles, and burners are susceptible to hydrocarbons in condensate and carbonic acid. Continual exposure will weaken the flue tubes. Condensation can also spoil combustion and produce a carbon monoxide hazard, with attendant risk of serious personal injury or death.</p> <p>For assistance in properly sizing a water heater, consult with your local A.O. Smith distributor or contact A.O. Smith @ 1-800-527-1953.</p>
<b>CAUTION</b>	<p>Since improper sizing can create problems that reduce the life of a heater, heaters that are undersized will not be eligible for warranty consideration.</p>