LAUNDRIES

REQUIREMENTS

The need for an adequate supply of clean hot water in the laundry industry is obvious. The type of load is a steady 8-10 hour per day usage with very high intermittent flow rates. Adequate storage is required in order to supply this intermittent high demand. Because of their high resistance to corrosion, the A. O. Smith Large Volume Storage Tanks are ideal for this type of application.

The laundry industry may be divided into two major segments, the large commercial or power laundry and the laundry store with individual machines for each customer. The sizing for these two types of usage is somewhat different.

THE POWER LAUNDRY

The barrel type laundry wheel is programmed for the individual needs by the operator of the plant. The water consumption characteristics, even on the same model machine, will vary from plant to plant with respect to the hot water consumed and the temperature at which it is used. For instance, a wheel in a hospital doing bed linen could use the first 20 minutes of the cycle as a cold water rinse and the last 20 minutes of the cycle as a 180°F rinse water, depending upon the type of bleach used. The same machine, when washing uniforms, could be using an entirely different program. The manufacturer of the machine should be consulted when possible. The most accurate information for sizing of a laundry of this type is usually obtained from the operator. However, when the information is not available, an accepted method of sizing is based on three gallons of water to wash one pound of clothing; half of this water is hot. Lacking better information, consider this hot water to be 160°F.

LAUNDRY STORE (Small Automatic Machines)

Laundry stores require adequate hot water storage plus recovery capacity equal to the hourly demand of the machines. The length of one cycle, plus 10 minutes (for loading and unloading), divided into 60 minutes will give you the number of cycles per hour that machine is capable of doing. This is usually one and a fraction to two cycles per hour. The number of cycles per hour multiplied by the number of machines, multiplied by the gallons of hot water used per machine will determine the hot water consumed per hour. This, plus the temperature of the hot water required will determine the recovery capacity of the water heating equipment. The information on the time cycle, temperature required, etc. can be obtained from the individual manufacturers of the clothes washing machinery, or your nearest A. O. Smith office. These machines have a set program of operation and are normally not re-programmed by the individual operators.

Storage tank selection is based on the number of machines that could be drawing hot water for their wash fill simultaneously. The table below gives a diversification factor that is applicable in this type of laundry.

DIVERSIFICATION TABLE

Stores with 1-11 machines	100% of possible draw
Stores with 12-24 machines	80% of possible draw
Stores with 25-35 machines	60% of possible draw
Stores with 36-45 machines	50% of possible draw

The amount of hot water used in the wash fill multiplied by the number of machines and corrected with a diversification factor from the table above, will assist in determining the amount of hot water that must be available from the storage tank. The A. O. Smith CER-TEMP 80® Recovery System was developed to provide maximum draw from storage tanks. Any A. O. Smith commercial water heaters can be installed with forced circulation to a storage tank in this fashion. It is possible to draw 80 percent of the storage tank without encountering an appreciable drop in temperature. Therefore, divide the maximum possible dump draw by 0.8 to determine the actual gallonage of the storage tank. This will indicate minimum size storage tank necessary.

Recirculation of hot water should be provided in laundry installations because of the wash produced depends on an adequate supply of hot water at the washing machine. In order to provide this, the best insurance is a recirculating system. Consult piping layouts for the proper system. Do not use the circulating pump of the water heating system for recirculating water to the laundry machines. Use a separate pump.

COMBUSTION AIR

In recent years, the increased use of combination dry cleaning and laundry stores, spot cleaning facilities, liquid bleaches with chlorine base, and pressure cans with Freon propellants has raised the problem of contaminants in the combustion air supplied to the equipment. As little as two to three parts per million can cause serious deterioration of the heat exchanger surfaces regardless of the type of heating equipment used. This condition adversely affects dryers, space heating and water heating equipment. Provisions should be made to protect the equipment by supplying combustion air from an uncontaminated source. Very often it is necessary to obtain air from outside the building and to maintain a slight positive pressure in the heater room in order to overcome this problem. It is also possible to develop contaminants in stores that have laundry only.

Many state building codes have very stringent regulations regarding ventilation in customer operated dry cleaning stores. These should be consulted when dry cleaning is involved in a laundry store.

CAR WASH

Warm water is necessary in a car-washing operation to materially speed up the washing process and reduce the amount of drying labor required. In addition, hot water is required for automatic machines used for towel washing. Use of hot water under high pressure with detergent pick-up by means of venturi action is fast replacing the steam cleaning of automobile wheels and white-wall tires. Scrubbing action of hot soapy water molecules produces a better job faster than the use of steam. Any system designed to mix a detergent with hot water by venturi action must be designed so that detergent is not circulated through the heater.

Use of reclaimed water has increased in these applications and circulation of filtered water through heater(s) from a settling tank is acceptable.

In northern climates, where ice accumulates under fenders, the car washing process is greatly accelerated by using warm water.

REQUIREMENTS

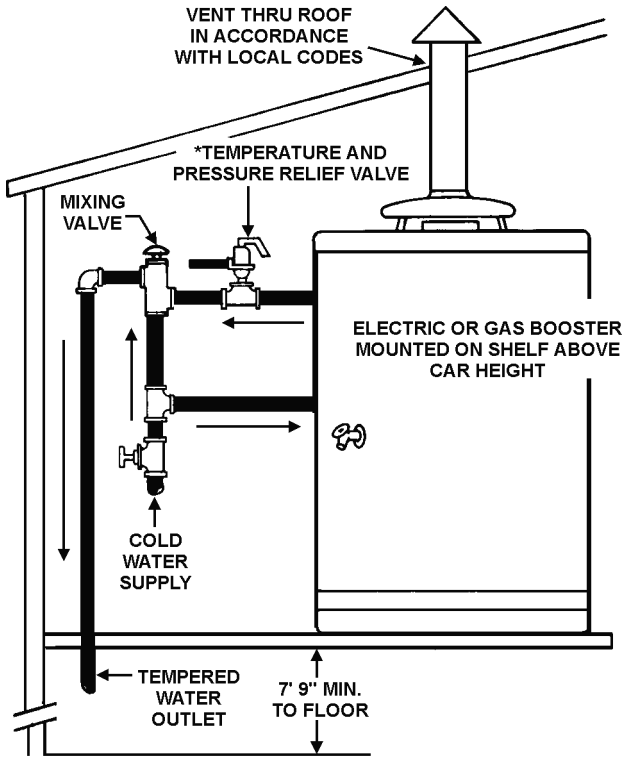
A temperature of approximately 110°F is ideal for use in a car-washing operation. Water at this temperature will not damage the wax finish of an automobile. However, water at up to 180°F may be used through a pressure nozzle to clean wheels and whitewall tires. (Some pressure-nozzle cleaning employs low-temperature warm water.) Water at 140°F to 150°F is required in washing machines to wash the towels. In car wash applications, the hot water storage tank capacity should usually be from 80 to 300 gallons. Water should be stored in this tank at the highest temperature required for the application. Where wheels are washed with water power, storage temperature might be from 160°F to 180°F and then mixed with cold water for both the washing machine and car-rinsing operations. Where wheel washing does not require hot water, the storage tank should be held at 140°F and mixed with cold water for the car-washing operation.

The water heating equipment should be sized to meet the hourly demands of the spray nozzle as rated by the manufacturer. The spray rinse at 110°F will consume approximately 45 GPM with approximately a half-minute spray period allocated to each car. A wheel-washing operation using water at 160°F to 180°F will require water at a flow rate of about 5 GPM and will consume approximately 2 1/2 gallons per car. Consult the car-washing equipment manufacturer's specifications to determine the specific requirements for each application.

Heaters used with filtered reclaimed water should be operated closer to the 110°F requirement and have controls set to approximately 115°F or 120°F. This excludes the use of this water source for wheel washing temperatures.

For a service station or any other one-at-a-time hose type car washing, a small tank electric or gas-fired booster heater will serve. Water should be stored at 180°F and mixed down to approximately 100°F through a mixing valve to extend usage time each cycle. The one or two lavatories usually included at this type of installation can be handled by the same equipment.

TYPICAL SERVICE STATION INSTALLATION



*PIPE TO OPEN DRAIN