A.O.SMITH

HOT WATER REQUIREMENTS DORMITORIES

TABLE C
ONE HOUR PEAK PERIOD
USE WITH TABLES 1 hr. A THRU 1 hr. G

DORMITORIES

This table may be used as a guide for estimating the One Hour hot water demand for dormitories. Estimated One Hour usages are taken from the EEI Studies which showed a peak hourly load of 5 gallons of hot water per person for dormitories.

TABLE C: HOT WATER REQUIREMENTS-DORMITORIES

(1) Number of Persons	(2) Gal. Required 1 Hour Period - 140°F Water				(3) Minimum* Storage Capacities
	3 GPM		5 GPM - Shower HD		
	40°F Inlet 100° TR	60°F Inlet 80° TR	40°F Inlet 100° TR	60°F Inlet 80° TR	
1-10	125	100	200	160	100
11-15	187	150	299	239	150
16-20	250	200	400	320	200
21-25	277	220	443	354	225
26-30	300	240	480	384	240
31-40	320	264	512	410	280
41-50	350	280	560	448	310
51-75	412	330	659	527	400
76-100	500	400	800	640	430
101-125	625	500	1000	800	475
126-150	750	600	1200	960	510
151-175	875	700	1400	1120	560
176-200	1000	800	1600	1280	600
201-250	1250	1000	2000	1600	650
251-300	1500	1200	2400	1920	720
301-350	1750	1400	2800	2240	800

* Storage capacities shown are theoretical minimums. See page A 401.0 for storage tank sizes carried in stock and page A 413.0 for insulated tanks.

TO USE TABLE C

1. Determine number of persons from Column (1).
2. Read gallons of 140°F water required from section (2) for dormitories at 40° or 60°F inlet temperature.
3. Read minimum storage capacity required from Column (3).
4. Consult appropriate availability table for equipment selection. (Be sure storage capacity of system selected is no less than shown in Column (3).

DORMITORY EXAMPLES

Problem: What A.O. Smith equipment will provide enough hot water for a dormitory to house 180 students and 5 administrative personnel with an inlet temperature of 40°F?

This is known

Number of Persons
100

Find this on TABLE C: DORMITORIES (pg. B 107.0)

Gal of 140°F water required in 1hr. period, 40°F Inlet	Minimum Storage Capacity
1000	600

Equipment must have: Minimum Storage Capacity of : 600 gallons
and in a 1 hr. period, heat to 140°F: 1000 gallons

Next, choose the type of fuel most suited to your installation: gas, oil, or electricity. Use the ONE HOUR AVAILABILITY TABLES on pages B 113.0 and 114.0 to complete the equipment selection. Space limitations, installation costs and difference in cost of various heater and tank combinations that meet minimum storage and recovery requirements will naturally influence the final selection of equipment.

GAS

COPPER HEAT EXCHANGER TYPE WATER HEATER W/AUXILIARY STORAGE TANK

Table 1 hr. A on page B 113.0 shows that a T-750 storage tank and a HW-670 heater will provide 750 gallons storage and 1250 gallons in the one hour peak demand period to meet the 600/1000 requirements.

Recommended equipment: One HW-670 & one T-750 storage tank.

GAS FIRED TANK-TYPE WATER HEATERS-MANIFOLDED

Table 1 hr. B on page B 113.0 shows the largest practical bank of heaters, four units, provides only 400 gallons of storage as the maximum. For a minimum storage requirement of 600 gallons in this example, manifolded heaters are not practical.

GAS-FIRED TANK-TYPE WATER HEATERS W/ AUXILIARY STORAGE TANKS

Table 1 hr. C on page B 113.0 shows that a BTC-500 heater with a T-750 storage tank will provide 1133 gallons to meet the example.

Recommended equipment: One BTC-500 and one T-750 storage tank. Forced circulation between heater and tank is recommended.

OIL

OIL-FIRED TANK-TYPE WATER HEATERS-MANIFOLDED

Table 1 hr. D on page B 114.0 indicates the largest available storage volume from a practical installation of manifolded COF heaters, four units, is 344 gallons. For a minimum storage requirement of 600 gallons in this example, manifolded heaters are not practical.

OIL-FIRED TANK-TYPE WATER HEATERS W/AUXILIARY STORAGE TANKS

Table 1 hr. E on page B 114.0 shows that a COF-455 with a T-750 storage tank will supply 1066 gallons in the one hour peak demand period, to meet the 600/1000 gallon requirements.

Recommended equipment: One COF-455 and one T-750 storage tank. Forced circulation between heater and tank is recommended.

ELECTRIC

ELECTRIC BOOSTER W/ AUXILIARY STORAGE TANK

Table 1 hr. F on page B 114.0 shows 2 CMC-54 booster heaters with 108 KW and a T-750 storage tank will provide 1043 gallons to satisfy the 600 gallon minimum storage and 1000 gallons availability.

Recommended equipment: 2 CMC-54 heaters w/54 KW each and one T-750 storage tank.
Note: A 1 1/2 hr. period for complete recovery of the auxiliary tank is needed.

COMMERCIAL ELECTRIC STORAGE-TYPE WATER HEATERS

Table 1 hr. G on the inside of B 113.0 shows that a DVE-600 or DHE-600 heater with an input of 150 KW will produce 1095 gallons for the one hour peak demand load. Other combinations of tank capacities and generating capacities may be used to meet this example.