HOT WATER REQUIREMENTS APARTMENTS

TABLE A
THREE HOUR PEAK PERIOD
USE WITH TABLES 3 hr. A THRU 3 hr. G.

APARTMENTS

This table has been prepared to serve as a guide for estimating the Three Hour hot water demand for various sized apartment buildings. Minimum storage capacities are also shown. The table assumes an average occupancy of 2 1/2 persons per apartment and 5 minute showers.

NOTE: Estimated Three Hour demands shown include shower load and other minor uses such as lavatories and residential dishwashers. Other major hot water consuming appliances such as clothes washers will increase the total demand. Consult manufacturers specifications for hot water consumption and increase generating and storage capacity accordingly.

IMPORTANT: IF APARTMENT BUILDING HOUSES STUDENTS, USE SIZING CHART ON AOSSG88100 (HOT WATER REQUIREMENTS FOR DORMITORIES). IF THE MAJORITY OF APARTMENT RESIDENTS NEED TO BE SOMEWHERE IN THE MORNING (WORKING COUPLES, FAMILIES WITH SCHOOL AGED CHILDREN, ETC.) USE THE INFORMATION BELOW AND SELECT PRODUCTS FROM THE TWO HOUR AVAILABILITY TABLES.

TABLE A: HOT WATER REQUIREMENTS - APARTMENT BUILDINGS

(1) Number of Apartments (2 1/2 Persons)	(2) Actual No. of Persons	(3) Gal. Required 3 HR Period 140°F Water				(4) Minimum* Storage Cap.
		2 GPM Shower HD Flow		3 GPM Shower HD Flow		
		40°F Inlet	60°F Inlet	40°F Inlet	60°F Inlet	
1-3	7	57	44	85	66	50
4	10	73	59	110	88	60
5-6	15	109	87	164	131	72
7-8	20	147	117	220	176	85
9-10	25	183	147	275	220	100
11-15	37	250	200	375	300	113
16-20	50	334	267	500	400	130
21-25	62	414	331	620	496	148
26-30	75	500	400	750	600	162
31-35	87	580	464	870	696	175
36-40	100	667	534	1000	800	188
41-45	112	695	556	1042	834	200
46-50	125	734	587	1100	880	210
51-75	187	1035	828	1552	1242	255
76-100	250	1317	1054	1975	1580	300
101-125	312	1581	1265	2370	1896	325
126-150	375	1851	1481	2775	2220	360
151-175	437	2098	1679	3146	2517	395
176-200	500	2335	1868	3500	2800	410
301-250	625	2751	2201	4125	3300	500
251-300	750	3002	2401	4500	3600	600
301-350	875	3502	2801	5250	4200	700

For conditions other than those stated above, consult your A. O. Smith supplier.
*Storage capacities shown are theoretical minimums. See AOSTT35100 for storage tank sizes carried in stock and AOSTT35200 for insulated tanks.
Diversity factors as previously mentioned have been used in calculating expected hot water requirements.

TO USE TABLE A

1. Determine number of apartments from Column (1).
2. Determine number of occupants from Column (1). NOTE: If average occupancy differs from 2 1/2 persons per unit, disregard Column (1) and use Column (2) "Actual Number of Persons" for estimating Three Hour demand and minimum storage capacity.
3. Read expected Three Hour demand from Column (3) for either 40° or 60°F inlet temperature.
4. Read minimum system storage capacity from Column (4).
5. Consult appropriate availability table for equipment selection. (Be sure storage capacity of system selected is no less than shown in Column (4).)

See reverse side for examples.

APARTMENT BUILDING EXAMPLE

Problem: What A. O. Smith equipment will provide enough hot water for a 30-unit apartment building with 75 occupants at 40°F inlet temperature?

This is known

Number of Apartments	Actual Number of Persons
30	75

Find this on TABLE A : APARTMENTS (pg. AOSSG88080)

Gal. of 140°F water required in 3 hr. period, 40°F Inlet	Minimum Storage Capacity
750	162

Equipment must have: Minimum Storage Capacity of: 162 gallons
and in a 3 hr. period, heat to 140°F: 750 gallons

Next, choose the type of fuel most suited to your installation: gas, oil or electricity. Use the THREE HOUR AVAILABILITY TABLES on AOSSG88120 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 3 hr. A on AOSS88120 shows the next larger storage tank above 162 gallons is T-200. Read down the column to find the next larger gallons provided above 750 is 775 gallons. Read left to find HW-225M as the correct model.

Recommended equipment: One HW-225M and one T-200 storage tank.

GAS-FIRED TANK-TYPE WATER HEATERS — MANIFOLDED

Table 3 hr. B on AOSSG88120 shows the next larger gallons storage above 162 is 200, found under the "Two Heaters" column for models BT-100. However, since the gallons available is only 568, it is undersize for the 30-unit apartment building. The line, 954 gallons available, is the correct size.

Recommended equipment: Two BTP-139 heaters manifolded in parallel.

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

Table 3 hr. C on AOSSG88120 shows that the next highest availability above 750 is 843 gallons. This figure is located in the columns for model BTR-250 having 100 gallon tank size, and the T-80 auxiliary storage tank. The 100 + 80 = 180 gallons which meets the minimum storage capacity of 162 in the problem.

Recommended equipment: One BTR-250 heater and one T-80 storage tank. Forced circulation, between heater and tank is recommended.

OIL

OIL-FIRED TANK-TYPE WATER HEATERS — MANIFOLDED

Table 3 hr. D on AOSSG88120 indicates 2 COF-199, 245 & 315 heaters will have the necessary 162 gallons storage. Two COF-199 heaters will supply 1206 gallons, thereby meeting the 750 requirements.

Recommended equipment: Two COF-199 heater manifolded in parallel.

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

Table 3 hr. E on AOSSG88120 shows the combined 86 gallons storage of a COF-245 with an 80 gallon auxiliary storage tank will meet minimum storage requirements of 162 (86 + 80 = 166). This combination will supply 792 gallons to cover the 750 requirement.

Recommended equipment: One COF-245 heater and one T-80 storage tank. Forced circulation between heater and tank is recommended.

ELECTRIC

ELECTRIC BOOSTER W/AUXILIARY STORAGE TANK

Table 3 hr. F on AOSSG88120 shows one CMC-54 heater with 54 KW connected to a T-200 storage tank can supply 824 gallons to meet the requirements of 162 storage and 750 availability.

Recommended equipment: One CMC-54 and one T-200 storage tank.

COMMERCIAL ELECTRIC STORAGE-TYPE WATER HEATERS

Table 3 hr. G on the inside of AOSSG88120 shows 2 DRE-120 or 2 DVE-120 manifolded heaters with 24 KW each will have gallons combined storage to meet the 162 gallon requirement 238 and either combination can supply 782 gallons for the 750 requirement.

Recommended equipment: 2 DRE-120 or 2 DVE-120 heaters. (24 KW each).

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