

**PARKER BOILER CO.**  
**WATER SOFTENER SIZING FOR PARKER STEAM BOILERS**

When sizing a water softener for a Steam Boiler system many factors affect the selection. Among them are 1) Boiler size. 2) Hours of operation. 3) Hardness of the water. 4) Amount of condensate return. 5) Desired time between regeneration. 6) Maximum flow rate. 7) frequency of blowdown.

A Parker Water Softener can be selected by determining the grain softening required based on the above factors.

Parker Boiler Co. manufacturers an Automatic type Softener. The Automatic type requires only checking the brine tank for salt.

In sizing a water softener, it is desirable to regenerate an automatic softener about every 3 to 6 days. Since Parker Automatic Softeners have a 24 hour, 12 day time clock, one can decrease or increase the regeneration span for sizing or variable load conditions. In most cases, on single boiler installations operating 8 hours per day, with more than 50% condensate return, water softener sizing is as follows:

1-1/2 – 50 H.P.	FGA-45-1 (769,500 PPM)
70 – 115 H.P.	FGA-90-1 (1,539,000 PPM)
*150 H.P.	FGA-120-2 (2,052,000 PPM)

\*Flow rate of float valves requires 2" softener valve.

**A TYPICAL SIZING EXAMPLE – PARKER WATER SOFTENER**

A 25 H.P. Steam Boiler is used in a Dry Cleaning Plant for pressing, spotting, and dry cleaning machines. It is estimated the boiler fires 8 hours per day at full rate. The average amount of condensate return is 51%. The make-up water hardness is 15 grains/gallon (GPG). GPG = PPM divided by 17.1.

**CALCULATE SOFTENER SIZE REQUIRED:**

**I. Total Gallons Used Per Day**

$$\frac{\text{BHP} \times 4.2 \text{ GAL}}{\text{BHP}} \times (1 - \text{\% Condensate}) \times \frac{\text{HRS}}{\text{DAY}} = \frac{\text{GALS}}{\text{DAY}}$$

Example:  $25 \times 4.2 \times (1 - .51) \times 8 = 412 \frac{\text{GALS}}{\text{DAY}}$

**II. Automatic Softener Capacity**

$$\frac{\text{GALS}}{\text{DAY}} \times 6 \frac{\text{DAYS}}{\text{REGENERATION}} \times \text{Hardness GPG} = \text{Cap Grains}$$

Example:  $412 \times 6 \times 15 = 37,080 \text{ Grains}$

Therefore, select FGA-45-1

See Brochure 301-FGA for Softener models.

**NOTE:** Sizing also on Parker Computer Application Program. Consult Factory for boiler water capacity.

If any additional information is required, please do not hesitate to contact the Factory or your Local Representative.

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