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47.5 HP FIRETUBE BOILER

Maximum BTU/hr Input (ie: Rated Input @ High Fire / 100% Input Rating)	$47.5 \times 42,000 = 1,995,000$ BTU
Cubic Feet of Natural Gas Required	$1,995,000 \div 1,000 = 1,995$ Cu Ft
Cubic Feet of Vaporized Propane Required	$1,995,000 \div 2,500 = 789$ Cu Ft
Gallons of Liquid Propane Required	$1,995,000 \div 91,600 = 21.8$ Gallons
Gallons of #2 Diesel Oil Required	$1,995,000 \div 140,000 = 14.25$ Gallons
Minimum BTU/hr Input at a 4:1 Turndown Ratio (Low Fire)	$1,995,000 \div 4 = 498,000$ BTU
Cubic Feet of Natural Gas Required	$498,000 \div 1,000 = 498.75$ Cu Ft
Cubic Feet of Vaporized Propane Required	$498,000 \div 2,500 = 199.5$ Cu Ft
Gallons of Liquid Propane Required	$498,000 \div 91,600 = 5.44$ Gallons
Gallons of #2 Diesel Oil Required	$498,000 \div 140,000 = 3.56$ Gallons
Maximum Steam Production in lbs/hr (High Fire)	$47.5 \times 34.5 = 1,635$ lbs/hr
Maximum Water Evaporation Rate	$47.5 \times .069 = 3.27$ GPM
Minimum Feedwater Pump Flow (on / off pump strategy)	$3.27 \times 2 = 6.54$ GPM
Minimum Feedwater Pump Flow (modulating pump strategy)	$3.27 \times 1.5 = 4.7$ GPM
Minimum Feedwater Tank Storage Requirement	37.78 Gallons
Steam Temperature at <u>100 psi</u> Saturated	337.90 °F
BTU/hr Output, Based on 80% Efficiency at High Fire	$1,995,000 \times .80 = 1,596,000$ BTU
BTU/hr Output, Based on 80% Efficiency at Low Fire	$498,000 \times .80 = 399,000$ BTU
Square Feet Heating Surface (sq. ft. HS) at 5 sq. ft. per HP	$47.5 \times 5 = 237.5$ Sq Ft
Minimum Steam Safety Relief Valve Capacity at Boiler Design	$1,635 \times 1.10 = 1,798.5$ lbs/hr
Minimum Water Softener Flow Capacity at High Fire (always based upon 100% input)	$3.27 \times 2 = 6.54$ GPM

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