



## GENERAL DATA & RULES OF THUMB

### 1. CYLINDER SIZE:

$$\text{Diameter} \times \text{Diameter} \times \text{Depth} \div 2200 = \text{cubic ft. of cylinder}$$

Accepted Capacity for Washer/Extractor: 5 to 6 lbs. per cubic ft.

Accepted Capacity for Dryers: 2.5 to 3.5 lbs. per cubic ft.

### 2. "G" FORCE:

$$\text{RPM} \times \text{RPM} \times \text{Diameter (in.)} \div 70,500 = \text{"G" Force}$$

### 3. MOISTURE RETENTION:

$$(\text{Weight After Extraction} - \text{Dry Weight}) \div \text{Dry Weight} = \text{Moisture Retention (\%)}$$

### 4. ELECTRICITY:

$$\text{Horsepower} \times .7457 = \text{KWH}$$

$$\text{Watt/Hour} \times 3.413 = \text{BTU}$$

$$\text{One KWH} = 3413 \text{ BTU}$$

To calculate approximate electrical consumption, use the following formula for each motor in the laundry (then total the results for all motors):

$$(\text{E} \times \text{I} \times 1.732 \times \text{PF}) \div 1,000 \times \text{No. hours operated} = \text{KWH/day}$$

E = volts

I = current in amps

PF = power factor\*

\*As a rule of thumb assume motors that run under a fairly constant load (such as Washer/Extractor or Dryer motors) @ 80%, or PF = .80.

### 5. WATER

1 gallon = 8.33 LBS.

1 cubic ft. of water = 7.48 gallons

1 cubic ft. of water = 62.425 lbs.

1 gallon = 0.1336 cubic foot

1 gallon = 231 cubic inches

Pound of water = .016 cubic foot

Pound of water = .12 gallons

For tank or cylinder volumes in U.S. gallons:

The square of the diameter (in.) x the height or length (in.) x 0.0034

A water column of one foot high exerts a pressure of .4333 pounds per square inch.

Doubling the diameter of a pipe increases its capacity four times.

Water expands 4.34% heated from 40 degrees to 212 degrees.

About 60% of water used in a laundry is hot, (if a conventional water system is used).

Boiling water 212 degrees Fahrenheit = 100 degrees Centigrade.

To convert to degrees Fahrenheit multiply degrees centigrade by 9/5 and add 32.

To convert to degrees centigrade subtract 32 from degrees Fahrenheit x 5/9.

## 6. WATER HARDNESS:

More tallow soap is needed for washing in hard water than in soft water.

Water hardness definition:

<u>Grains/Gal.</u>	<u>Parts/Million</u>	<u>Description</u>
Less than 1.0	Less than 17.1	Soft
1 to 3.5	17.1 to 60	Slightly hard
3.5 to 7.0	60 to 120	Moderately hard
7.0 to 10.5	120 to 180	Hard
10.5 & over	180 & over	Very hard

1 Grain per gallon = 17.1 parts per million

PH Above	7.0	Alkaline
	7.0	Neutral
Below	7.0	Acid

## 7. GAS

BTU is the amount of heat required to raise one pound of water one degree F (approx.)

One Therm (TH) = 100,000 BTU

One Cubic foot = 1,000 BTU (approx.)

One MCF (1,000 cu. Ft.) = 10 therms (approx.)

One cubic foot of butane gas = 3,200 BTU

One gallon No. 2 (Diesel) fuel oil = 138,000 BTU (approx.)

One gallon No. 6 fuel oil = 142,000 BTU (approx.)

One Kilowatt (KW) = 3,413 BTU

One gallon propane = 92,000 BTU

Gas Cost: The cost of gas is usually stated in price per therm or price per M or MCG (1,000 cubic feet). In computing costs, use the total cost per therm. Various rate structures are used by local gas suppliers. These include "straight line rates" and "block rates" in which the rate for various quantities. Additional charges such as "demand charge", "commodity charge" or "service charge" may also be part of the gas cost. Any charge the customer must pay to receive gas, including sales tax where applicable, should be included in the total gas cost from which the actual cost per therm is derived.

## 8. BOILER HORSEPOWER:

One BHP = The work of converting 34.5 lbs. of water per hour from and at 212 degrees fahrenheit to steam at 0 lbs. gauge pressure.

One BHP = 35,000 BTU/hr.

One BHP = 34.5 lbs./steam

One BHP = 9.803 kilowatts

## 9. CART CAPACITIES:

<u>Cart Size (Bushels)</u>	<u>Dry Soiled</u>	<u>Wet</u>	<u>Folded</u>
1	6.22	12.45	14.94
5	31.12	62.45	74.70
6	37.35	74.70	89.64
8	49.80	99.60	119.52
10	62.25	124.50	149.50
12	74.70	149.40	179.28
14	87.15	174.30	209.16
16	99.60	199.20	239.04
18	112.50	224.10	268.92
20	124.50	249.00	298.80

10. METRIC EQUIVALENTS:

1 U.S. Gallon	=	3.785	liters
1 cubic foot = 0.028 cubic meters	=	28.317	liters
1 foot	=	0.3048	meters
39.37 inches - 3.28	=	1.0	meter
1 pound	=	0.4536	kilograms

11. Total Length of Ironing Contact Under Pressure:

Angle of Degree of Contact / 360 Degrees x Roll Dia. (in inches) x 3.14  
x # of rolls = heating surface under pressure (in inches).

12. Number of Sheets Per Hour:

12 inches x feet/min x 60 minutes ÷ Sheet length (in inches) x gap between  
sheets (in inches) = number of sheets per hour.