

Taking 50400 lbs. per square inch tensile strength $\frac{7}{8}$ " plate,
12 feet diameter:

$$\begin{array}{r}
 50400 \\
 \times 7 \\
 \hline
 8)352800 \\
 \hline
 44100 \\
 \times 2 \\
 \hline
 144)88300(612 \\
 \underline{864} \\
 180 \\
 \underline{144} \\
 360 \\
 \underline{288} \\
 72
 \end{array}$$

$$\begin{array}{r}
 612 \\
 \times .70 \\
 \hline
 6)428.40
 \end{array}$$

71.4 lbs. per square inch
working pressure.

USEFUL QUANTITIES.

The following are sufficiently correct for all practical purposes; but they are not scientifically accurate:
One gallon equals $\frac{1}{4}$ of a cubic foot, or $6\frac{1}{2}$ gallons equals one cubic foot. One gallon of fresh water weighs ten (10) pounds. Thirty-five (35) cubic feet of sea water weighs one (1) ton. One cubic foot of fresh water weighs 62 $\frac{1}{2}$ lbs., equals 1,000 ounces. One cubic foot of salt (sea) water weighs sixty-four pounds. One gallon sea water weighs 10 $\frac{1}{4}$ lbs. 1,728 cubic inches make one cubic foot; twenty-seven cubic feet make one cubic yard.

THE RATIO OF EXPANSION OF STEAM, ETC.

A short rule for the ratio of gains of expansion is, add 37 to steam pressure of gauge, and divide by 22, equals the proper ratio of the expansion.

Example.— $90+37 = 127 \div 22 = 5.77$ best ratio of expansion.