

Shower System

Friday, April 27, 2018

Water Temperatures for Shower:

Minimum = 100 ° F

Maximum = 120

Preferred = 108 - 112

A full tank normally requires: stoke full, burn for 30 minutes, restoke, burn for another 45 minutes.

Typical use is 5 to 10 gal.

Capacity of tank = 24.5 gal

Typical flow rate = 1 gal/min

Shower Tank Measurements:

	D	H
Tank	16.8"	28.75"
Flue	4.0"	26.5"

Depth to outlet = h = 27.25"



Shower tank volume:

$$A = \frac{1}{4} \pi (D^2 - d^2) = \frac{1}{4} \pi (16.8^2 - 4^2) = 208 \text{ in}^2$$

$$V = Ah = (208 \text{ in}^2) (27.25 \text{ in}) = 5660 \text{ in}^3 = (3.28 \text{ ft}^3) (7.48 \text{ gal/ft}^3) = 24.5 \text{ gal (US liq)}$$

$$V/h = 24.5 \text{ gal} / 27.25 \text{ in} = 0.90 \text{ gal/in}$$

$$h/V = 1.11 \text{ in/gal}$$

$$\text{Tank fill rate} = 8.0 \text{ s} / \text{gal} = 7.5 \text{ gal/min}$$

Shower Tank Labels

(L = water surface from top lip of tank)

For gallons used:

L	Gal
0"	0
5.6	5
11.1	10
16.7	15
22.2	20
27.25	24.5

For gallons remaining:

L	Gal
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0"	24.5
5.1	20
10.6	15
16.15	10
21.7	5
27.25	0

Note:

1.8 gal at shower meter went from old markings of 9.5 to 13.5

The meter at the shower reads 20% low. In other words, 1 measured gallon reads 0.8.

Tank Outgoing fittings:

Nipple	3/4 x
Ball Valve	3/4" soldered
Nipple	3/4 x
Hose fitting	M hose thread
Garden hose	



Shower incoming fittings:

Garden hose	MGHT hose thread
Adapter	3/4FGHT to 3/4FIPT
reducer	3/4MIPT to 1/2MIPT
Water meter	1/2 FIPT to 1/2FIPT
nipple	1/2 x
elbow	1/2
nipple	1/2 x
ball valve	1/2
nipple	1/2 x
elbow	1/2
nipple	1/2 x
Flex hose	1/2FIPT to 1/2MIPT
Flex hose	1/2FIPT to 1/2MIPT
Shower head	1/2FIPT



Shower head flow rates

Head	Full tank	1/4 tank
Open	1.3 gal/min	0.8 gal/min
Fan sprayer	1.3	0.8
White offset	0.6	0.4

