

# HouseNeeds, Inc.

Please read the following information to determine which pump will meet your needs.

To size a well pump you need to know 6 things.

- (1) The house pressure required.
- (2) How deep is the pump to be set.
- (3) The standing water level (static water level).
- (4) The well recovery rate in gallons per minute
- (5) How many stories the water is to be pumped.
- (6) House usage in gallons per minute required.

When you know the values of the 6 parameters listed above you can then easily figure the correct pump size. There are other factors involved but the 6 listed above are the most important.

We will figure an example well assuming we want to have 60 PSI, the well is drilled 200 feet, the well recovery rate is 7 gallons per minute, the house is 2 stories high, the well is drilled 100 feet from the house, the static water level is 25 feet and the house has 2 bathrooms.

**First step:** take the house pressure needed and multiply it by 2.31.

This will determine the head pressure needed for the house.

For our example we will use 60 PSI.

$60 \text{ times } 2.31 = 138.6 \text{ feet of head needed for the 60-PSI at the house.}$

**Second step:** figure out the depth you will be setting the pump.

Most pumps are set 20 feet off the bottom of the well.

Sometimes the pump is set higher than 20 feet off the bottom if the static (standing) water height is close to the surface (a well with a 6-inch casing contains 1.347 gallons of water per foot).

For our example we will use 200 feet.

$200 - 20 \text{ (feet off the bottom)} = 180 \text{ feet of head.}$

**Third step:** add up how many stories you will be pumping the water up to.

For our example we will figure 2 floors at 10 feet per floor.

$2 \times 10 = 20 \text{ feet of head.}$

**Fourth step:** figure the head loss in the 1-inch piping from the well to the pressure tank. This is assuming the pressure tank is in the house.

For every 125 feet of 1-inch pipe there is 6 feet of head.

For our example we will use 100 feet from the well to the house.

$100 \text{ divided } 125 = .8$

$.8 \times 6 = 4.8 \text{ feet}$

**Fifth step:** add all of the sums of the first four steps together.

This total will give you the amount of head in feet the pump will need to overcome.

Step (1) = 138.6 feet of head

Step (2) = 180 feet of head

Step (3) = 20 feet of head

Step (4) = 4.8 feet of head

$138.6 + 180 + 20 + 4.8 = 343.4$

So for our example you need a pump that is able to meet or exceed 343.4 feet.

Next you need to meet the gallon per minute requirements of all the fixtures using water.

For a one-bathroom house you need 5 to 7 gallons per minute.

For a two-bathroom house you need 10 gallons per minute.

For a three-bathroom house you need 15 gallons per minute.

For a four-bathroom house you need 20 gallons per minute.

So we have figured the minimum head pressure to be 343.4 feet of head.

We are supplying a 2-bathroom house so we need 10 gallons per minute.

The well has a recovery rate of 7 gallons per minute and has a static water level of 25 feet. To figure the amount of water stored in the well we will take the pump depth of 180 feet and subtract the static level of the well (25 feet) and then multiply the sum by 1.347 gallons for every foot of well with water in it.

$180 \text{ (pump depth)} - 25 \text{ (static level)} = 155 \text{ feet of usable water.}$

$155 \text{ (feet of usable water)} \times 1.347 \text{ (gallons for every foot of well with water in it)} = 208.785 \text{ gallons of stored water in the well.}$

The average family of four uses 185 gallons of water per day. The well has a recovery rate of 7 gallons per minute and there is 208 gallons of stored water in the well. At 7 gallons per minute the recovery rate of the well is 420 gallons per hour. This means for continuous pumping of 10 gallons per minute it will take over 69 minutes to start to run dry. The 10-gallon per minute pump should work fine for the example house as it is capable of meeting the demand and should not ever pump the well dry.

We look forward to providing answers for all of your future questions regarding HouseNeeds products.

Hope this helps and have a nice day!

Gary J. and The staff at HouseNeeds.com

<http://www.houseneeds.com>

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