

braumeister measurements

Notebook: supersupergrover's notebook

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URL: <http://www.aussiehomebrewer.com/forum/index.php?showtopic=57924&st=880>

Youtube demo-ing braumeister...

Howdy Braumiser builders. I have had some questions about pot and malt pipe dimensions etc of the **50L Speidel Braumeister**, so I thought I would take some measurements and post for the benefit of all.

There are more dimensions shown in the photos than I have discussed below.



Left to right: short malt pipe, 50L malt pipe, 50L Braumeister.
(Weights in green are how much the item pictured weighs).

I have calculated the maximum grain volume area as the total height of the malt pipe minus the height the filter plate sits up from the floor minus the height that the top filter plate reaches. Maximum short malt pipe grain *height* = 275mm - 110mm - 33mm = 132mm (see explanation of 33mm in 2nd photo)

Maximum 50L malt pipe grain *height* = 480mm - 110mm - 33mm = 337mm

Volumes of these items:

Maximum volumes of usable area for grain:

Short malt pipe **12.41 L**

50L malt pipe **31.68 L**

The *maximum* total volume of the BM *main vessel* = **85.14 L**.

You would never actually fill a pot to the top if you want to leave it unattended during the boil. I am comfortable with a preboil volume of 66L generally not being able to boil over in this sized pot (100% rye I did recently was an exception, I had to knock the foam down). That is a head space of about 33% (or one third in the old measure) more than the preboil boil volume. According to Speidel (of the 50L unit) you can expect 50L of finished beer (allowing for all losses) from the 85L main vessel. Food for volume thought...

[How much milled grain would they take?](#)

If 1kg of grain displaces 0.65L... using my figures punched into [angus_grant's volume calculator spreadsheet](#) <http://www.aussiehomebrewer.com/forum/index.php?entry930100>
Link at bottom of first post as a P.S.

Looking at some liquor to grist ratios:

Short malt pipe = 4.6kg (2.0L/kg), 3.9kg (at 2.5L/kg), 3.4kg (at 3.0L/kg)

50L malt pipe = 11.9 kg (at 2.0L/kg), 10 kg (at 2.5L/kg), 8.6kg (at 3.0L/kg)

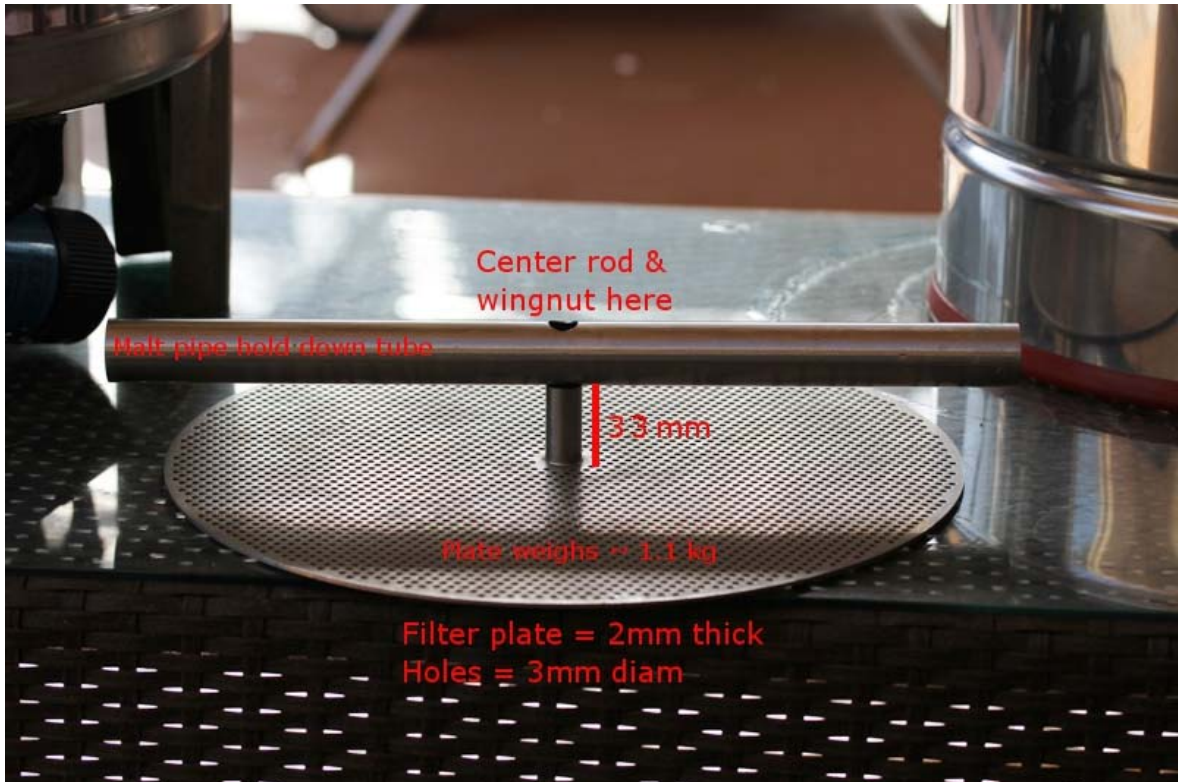
This accords with what users have said about the 50L malt pipe which I thought to be a total grain volume of 9-11kg (as listed by Speidel). Having said that I have mashed in and then added more grain to a total of 13kg of grain in the 50L malt pipe (and thought I could put more in... I had been drinking...). I reckon you could go more (especially if you have 'had a few' prior to mash in 😊) but perhaps you are risking making the grain bed too dense and the pumps might not be able to force the wort through it and then risk scorching of the wort?

I would be happy enough to **generalise** and say:

The **short malt pipe**, in the 50L unit would *comfortably* take **3.5kg - 4.5kg** of grain.

The **50L malt pipe** would *comfortably* take **8.5kg - 12.0kg** of grain.

You could mash outside of these ranges but it is up to you to decide if this is *comfortable*.



This is how the top filter plate would sit on top of the grain bed if it was as high as it could go. The horizontal tube sits on top of the malt pipe to hold it down with a wing nut. Because of the stabilising tube (stops the plate lifting/tilting to one side etc) length of 33 mm, the maximum height the top filter plate could be is 33mm less than the top of the malt pipe.



The malt pipe has a V shaped rolled lip that protrudes into the malt pipe. The filter plate slides

up and down the centre rod and the bottom filter plate stops on this lip. The plate thus sits about 110 mm above the floor of the BM. The maximum height of the element under the filter plate is 75mm. This equals 35 mm gap between the element max height and the filter plate in the malt pipe. This means that the element is surrounded by 10.34 L of wort underneath the malt pipe and grain.

The bottom filter plate is only 35mm above the center element (50L has two elements). That sounds reasonable to me to stop potential scorching of the grains closest to the element? It is likely to be as Matho found, due to the no bend zone of the element directly above the ends. The element sits quite high at 75mm at it's highest point.

Perhaps being this high also leaves enough room to be able to get a cleaning device under the element? (between the pot base and the lower ring of the element - about 2 1/2 coils around)

The element I have ordered from thermal products for my minimiser build will be bent at 25-30mm from the ends, to keep the element at a lower profile. I will see whether this makes it difficult to clean the element. Of course I can go lower than this with my filter plate because as it is only a small unit, there will not be a center element under the bottom plate. I might try for about 20mm above the main vessel bottom.

As Flo says, I reckon the large area would allow for more even distribution of the pressurised wort up through the filter plate.

Having said that, the area under the bottom filter plate is excessive when using the short malt pipe. I think this may be why MHB says that the short malt pipe for the 50L BM is not the best bit of kit and that it is more suited for 30L production. Perhaps the short malt pipe makes the *minimum* volume of water needed higher than perhaps it ought to be relative to the volume of grain?

Edit: no the 50L does not have flow control on the pump outlets.

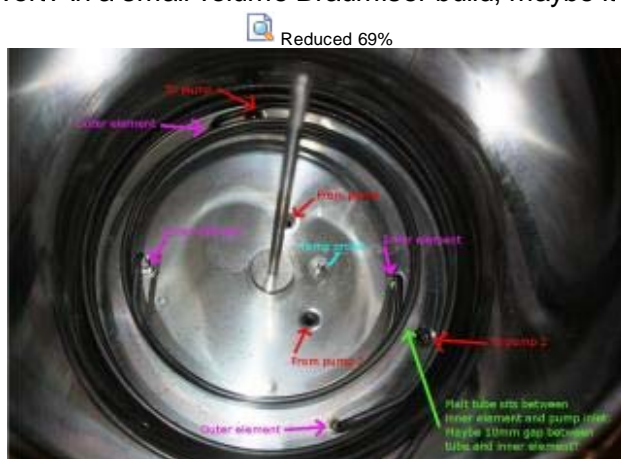
Edit#2 see this post for a picture inside the 50L BM. You can clearly see the pump outlets.

@Flo: are the outlets more towards the outer edge compared to the 20L BM?

<http://www.aussiehomebrewer.com/forum/index.php?st&p=835439>

View of the inside of a 50L BM, showing two elements.

The other element work around that might work, would be one of those concealed elements from an urn. I saw someone bolt one of them into the bottom of a keg somewhere here on AHB. The BM elements heat pretty quickly (15amp/3,600watts) and I suppose it comes down to element surface area contact with wort. A concealed urn element would be neat and tidy and easier? to clean but may not ramp as quickly due to less surface area contact with the wort? In a small volume Braumiser build, maybe it wouldn't be an issue.



1024 x 683 (445.72K)

Obviously the view from below. I believe the 20L BM has one element and one pump.

Reduced 69%



1024 x 683 (295.65K)

These are the filter plates. The piece of tube in the centre would serve to help align them on the horizontal plane. If they were not there, one side could be up and one side down etc. Also keeps them horizontal as they move or are lifted out with the malt pipe.

Reduced 69%



1024 x 683 (318.83K)

for the record the braumiser has a ramp rate of 2.5 deg/min



dual lift nuts - top for lifting, bottom to allow sparging height

Braubushka comments: More than Speidel

The BrauMeister is a great design and a very capable brewing system. It is built to a particular price point and so lacks a few frills that I would include in any home built machine.

Things I would include as improvements are:

- **Automatic whirlpool and wort cooling**
- Ability to both monitor and control via the cloud (ie. on a smart phone)
- Integration with software such as BeerSmith
- **Ability to save and recall previous brew settings**
- Simplify the controller and make the unit more compact ala Speidel
- **Design so mash pipe does not need to be fastened into kettle**

The items above in red are currently implemented in BrauBushka. My machine runs on a modified variation of the BrewTroller system but is more complex than I'd like. BrewTroller attempts to be all things to all brewers. I've not had the time or patience to recode it to a point that I'd be happy with.

Whirlpool and chilling

If I had the skills and equipment (or budget) I would build a kettle with a cooling jacket on its outer surface. In lieu of that I run a chilling coil that is fixed permanently inside the kettle and I'm happy with how it works. For whirlpool a simple pipe is inserted into the kettle after mashing that creates a whirlpool when the pump is operating.

Don't need to secure mash pipe

I know a number of people building single vessel systems have had no end of trouble getting a seal between the mash pipe and the kettle. From the start I went with a simple solution that

was within the capacity of tools in the workshop. Rather than have a large opening and seal between pipe and main unit, I went with a modified cam lock fitting. This is quite a departure from the Speidel design because the open aperture in the pipe is very small. This has a couple of flow on effects. First, it is more difficult lifting the mash pipe from the main unit because wort does not drain from it as easily. Second, I've discovered that the mash pipe stays in position without any need to lock it down. I do need to lock the top filter on the pipe, but the pipe stays in place on its own during mashing.

The first issue may seem like a deal breaker for some, but I've not found it to be a problem at all. All it takes is an extra 30 seconds wait for the system to equilibrate after mashing, and the pipe can be easily lifted. It may be more of an issue for a 50 litre version but I've not tested it.

<http://www.homebrewtalk.com/f14/speidel-braumeister-brewmaster-229225/index48.html>

Tested a simple mod on my 20l unit to add more of a whirlpool to the pump output. Used a 1" length of 3/8" ID x 5/8" OD silicone tubing press fit into the pump output with a 1/2" copper street elbow on top. Fits nicely under the bottom of the malt pipe and left me with a nice center cone. If you're using an immersion chiller there should just be enough room under the bottom plate of the malt pipe to replace the elbow with a 45 degree elbow directing the wort up to distribute the heat better.

I didn't run into any issues adding this to the mix - don't curse my name if you try it and do. I can't imagine removing the malt pipe and fishing around in hot wort to work this out would be much fun. 😊

-Chris



