AAbratek column (simplified version)

Construction, cost estimate, description of operation

Introduction

This topic is devoted to the AAbratek column, the so-called simplified version.
It was developed by our forum colleague @Aabratka and is a modification of the *Nixon Stone column.*

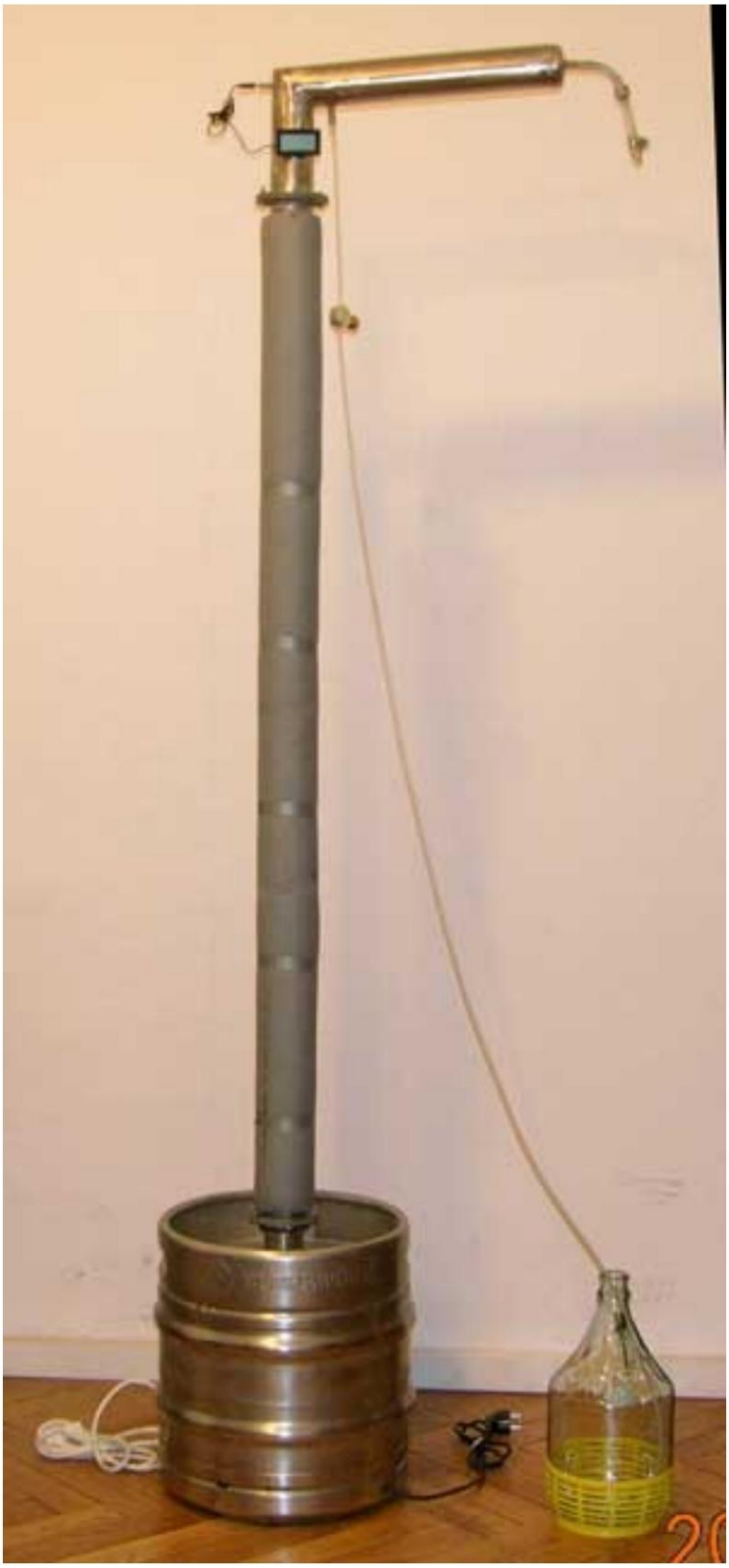
Here is a link to the AAbratka
website www.gorzalka.ovh.org/abratek/destylacja/destylacja.html

The guiding principle behind this description was to create something like a guide for people who want to build their first column. I hope it will answer a lot of basic questions and will shorten the time needed to dig through forum resources.

So far, I have built three such columns. They are simple to build and reliable in operation.
Very good to start playing with home ethanol distillation. Below are photos of my razors from the largest to the smallest.

1. Filling height 2.0m, pipe diameter 70mm

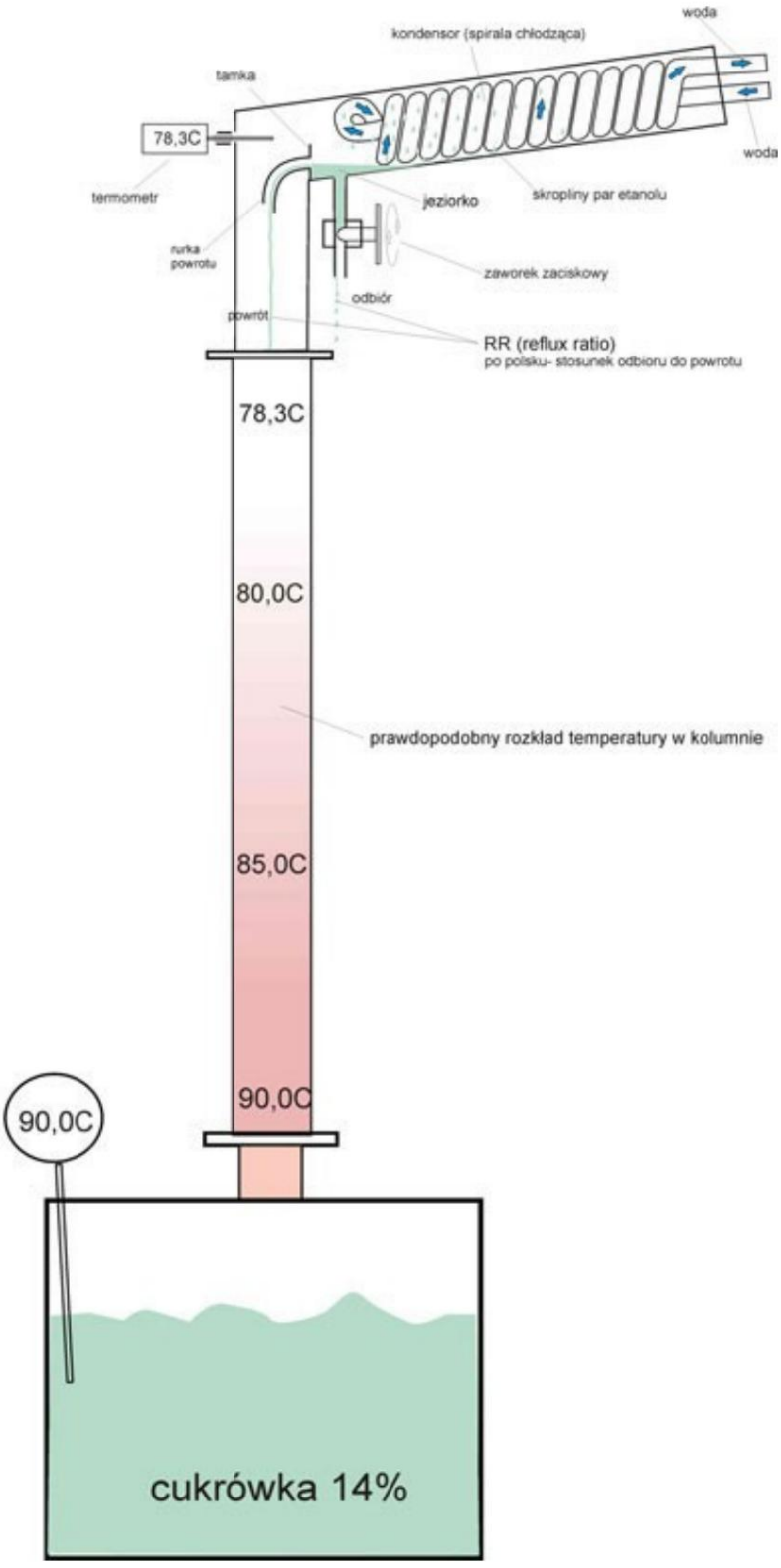
2. Filling height 1.4 m, pipe diameter 60mm



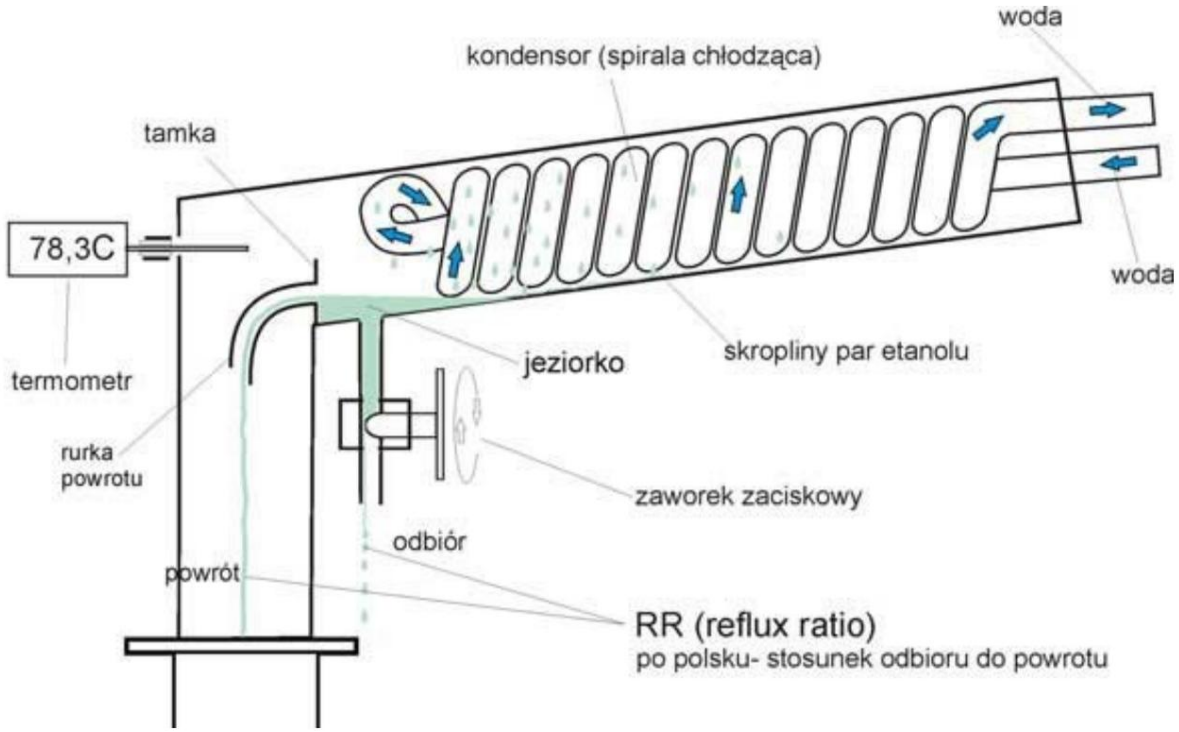
3. Filling height 1.2m, pipe diameter 52mm

Construction

At the beginning, I present a pictorial diagram showing the cross-section of the column and its basic elements.



Below we see a drawing of the head itself



On the occasion of this drawing, I will answer frequently asked questions about the construction of warheads.

1. What should be the head's ascent angle?
   A: In my opinion, it should be within 5-15 degrees. It makes no sense to do bigger because it distorts the essence of this construction. It is supposed to be low in order to gain as much as the height of the filling angle of less than 5 degrees places the risk of distillate pouring out, unnecessarily increasing the pool capacity and cooling it down.

2. How high should the dam be?
   A: The height of the entire dam may reach even half the diameter of the column, the most important is the height of the return pipe opening. I make it 8-12mm from the bottom of the dam. This design has two advantages. The high dam prevents the turbulent lake from overflowing, and the low-welded return tube results in a shallow lake. The small pond capacity is favorable for the separation of foreruns and tails.

3. How should the diameter of the return and receive tube be ?.
   A: In my opinion, 6mm of the inside diameter is enough. I am writing "calmly" because on such diameters, as part of my experiments, I obtained a distillate of 7 liters per hour when heated with gas and nothing got stuck. Of course, the use of a larger diameter will certainly not hurt and does not require virtuosity in welding.

4. How to make a cooling spiral?
   The easiest way to bend yourself is from a copper tube with an outer diameter of 8-12mm. The disadvantage of this solution is the copper itself, which tarnishes and requires cleaning before distillation. A better material is an acid-resistant steel (KO) tube. In home conditions, however, there is little chance that it will bend properly. It is best to entrust it to a specialized company whose address is easy to find on the forum.
   The best material is a corrugated pipe made of KO with the symbol DN8 or DN12. It is bent

literally in the squares. The disadvantage of this solution is the availability, price and the requirement to solder the ends.
In general, the spiral should be wound in such a way that it has the smallest possible clearances from the head walls, and its interior is not too empty. Depending on the thickness of the tube, different winding methods are used. Some make a straight spiral with one end passed through the center, others wind two spirals on top of each other, still others use a water core in the form of a thicker tube and wind the spiral over it. How much of this tube do we need? It depends on the heating power. For example, when heating with 3000W heaters, 5m of KO or copper tube is enough , possibly 2.5m of corrugated tube.

5. Should the head be tightly closed ?.
A: NOT. It may be without a lid, i.e. completely open. A well-made condenser with the right water flow will not allow even a little ethanol vapor to escape. Of course, the use of a lid is useful for a good centering of the spiral, aesthetics and solidness of the mounting of the water inlet and outlet terminals. However, overly tight closure should be avoided. Even a small gap will be enough to equalize the pressure inside with the atmospheric pressure.

6. What should the water flow be?
A: It depends on the heating power, for example, when heating 3000W with heaters, 1 liter per minute is enough. It is generally good when at least half of the head is cool and the water is flowing in a calm stream and slightly warm.

7. Answers to more questions and details of the construction can be found on the forum in the topic "Aabartek head" http://www.bimber.info/forum/viewtopic.php?t=1477

So much for background information.
Below, I would like to describe a specific column.

As an example, I chose my "medium" version built on a 60.3mm pipe. In my opinion, it is very versatile and has a good price-performance ratio.

During its construction, I set myself the following
goals: Low cost, as simple as possible, high efficiency, overall height of about 2 m, power supply.

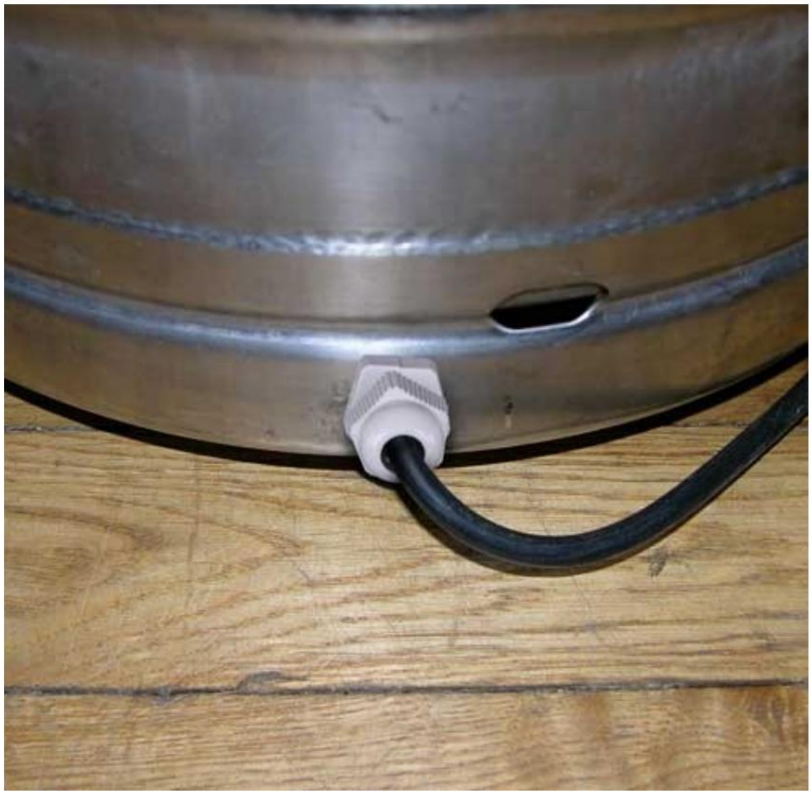
Below I present her photo with the dimensions marked.

I will start describing the construction details from the heating container. I used a 30l keg for this

As heating elements, I used two 1000W and 2000W heaters

In the pictures below I will show you how to fix the power cables and install the heaters.

Perhaps protection with heat shrink tubing would be better than tape.



It is good to protect the wires with a special non-flammable insulating gland, available in any electrical store.

Below is a drawing showing how the heaters are arranged inside the keg

Such fastening is extremely simple and quick. The base of the keg plays the role of a tip cover here heaters.
The disadvantage is the difficulty of keeping them low. They stick up and require 12l of filling to be poured submerged.

Of course, you can try to bend them and set them even lower.
I assemble them as follows. First, I drill 15mm holes. Then I thread it through one of the string and I slide the other end through the neck of the keg to the outside. I attach the heater to string and drag it inside, just , until its tip hits the hole. After inserting the tips into the holes, it will be shattered tighten the nuts. Attention! If the heater does not want to pass through the neck, connect it to power and heat for a moment to a cherry color. When it cools down, it becomes soft and can be used easily form. Without this treatment, it may break when bending.

The heaters can also be mounted on , in a more professional way and secured with a special casing. the side. The material cost for its production is low (about PLN 15), but it requires a lot of work.
This version is presented below.

The use of two heaters has the advantage that it largely avoids the problems associated with home electrical system overload. The load of 3kW is over 13A,. However, it often happens that sockets are on 10A fuses. Then we simply disconnect the 1000W heater and work on the second o power of 2000W.
Remember that for safety reasons, a zero installation is required, best of all residual current circuit breaker.

In the next photos I present the method of attaching the column pipe to the keg.
I welded the cap to the cap, in which I symmetrically mounted the stainless bolts fi 6.
This symmetry is very important when , because it allows quick and trouble-free use in later use folding the column. When marking the holes, use graph paper and a pair of calipers.

The tab is made of 3mm sheet metal, so you could tap holes and screw in screws.
Then I cut the gasket visible below from the silicone sheet. Its thickness is 5mm

A second flange with appropriately drilled holes is welded to the main pipe. When assembled, the connector looks like this:

Of course, you can use a quick-SMS connector, but its price is about three times higher than the above solution. It is also difficult to access for diameters 60.3 mm.
Below I present the SMS mount.

As I wrote before, the whole loudspeaker is made of a 60.3x2.0mm KO tube. Interestingly, the price is only slightly higher than the popular 52x1.5mm pipe. This is one of the reasons I chose it for construction of a model column. The second reason is the larger diameter that allows you to work with a power of 3kW. Attention! if the scourers are compacted too much, such a heating power may already flood the column of this diameter i prevent its proper functioning.

The pipe can be insulated with foam insulation available in construction and plumbing stores

It is also good to insulate the entire keg, for example with a , or an old jacket. Of course, with heating gas blanket something like that can be avoided. Warming allows for a noticeable acceleration of warming up, increasing efficiency and saving electricity.

As a packing material for the column, I used Coral MAX steel wires.

A description of these scourers can be found in the topic " Sink test" http:// www.bimber.info/forum/viewtopic.php?t=1875&postdays=0&postorder=asc&start=45 They are characterized by a very good price-quality ratio. small corals) they are made of much weaker steel.From other brands I recommend Harry's wire rods "Dobry Duszek" and "Morana". The latter is more than twice as expensive, but the steel from which it is made is of much better quality than Corala and Dobre Duszki. the Duszki of the steel wires. Even you can never be sure of depending on the delivery, may differ in the grade of steel they are made of. To be sure, it is good to first buy a few pieces for a trial. the topic "Druciak / Zmywak - Zone" http://www.bimber.info/forum/viewtopic.php?t=113

Once again, I would like to remind you that when using a 60.3mm pipe and heating with 3000W heaters, you should not ram the scourers too much. The packing density is better not to exceed 250 g / l. It is also worth "disheveling" them. Their structure then becomes more uniform and it is easier to achieve uniform packing of the column.
You should also leave a few centimeters of free space at the bottom. This is to create a transition buffer around the keg cap that has a smaller through diameter. In this way, we get rid of the risk that this place will create a blockage and floods.
I will answer right away, in the question of whether the scourers fall down under their own weight.
Do not worry, they will not fall, they press enough against the walls of the column.

We slowly go up in the description and come to the head. Below I present photos of its individual elements.

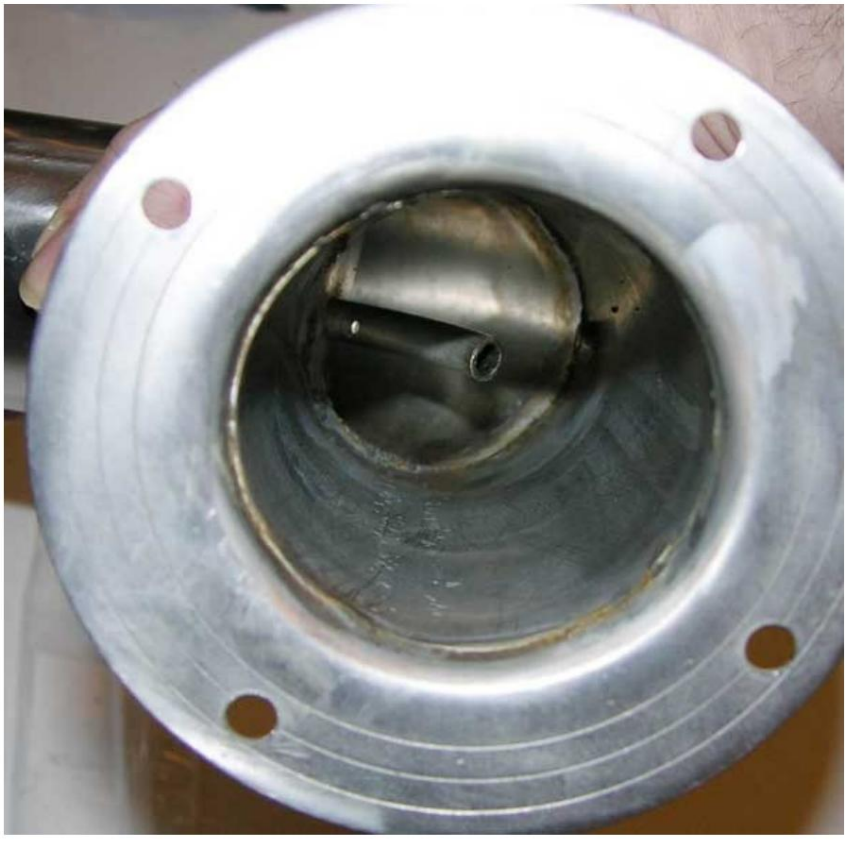
The connection of the column tube to the head is built on the same principle as the one at the bottom of the keg.

Below we see the head body

The thermometer mounting hole is made of a piece (about 15mm) of 8.0x1.0mm tube. In the middle there is pressed in gasket made of a piece of silicone tubing 6.0x1.5mm. The thermometer sensor falls into such a seal with quite a lot of resistance, so it is worth just slipping it before installation.

The pond dam is close to half the diameter of the pipe, but the return tube is welded low so that the pond
it was as shallow as possible. In the photo below you can perfectly see the thermometer hole and the return tube hole.

Below we can see an arched return tube. It has dimensions of 8.0x1.0mm. It may seem like a small one
diameter, but I can assure you that it is enough for a loudspeaker twice as efficient.



The condenser spiral is made of a 2.5m section of a DN12 corrugated pipe (smaller diameter 12mm, larger diameter 16mm).

Someone may ask why I just used such a tube?
Let me remind you that my assumption when building this column was the lowest possible material cost and simplicity of construction. It turns out that 2.5 m of this tube provides the same heat transfer surface as 3.5 m of the popular DN8. The difference in price is small and here DN12 is better. The larger diameter of the tube chosen by me also allows the spiral to be bent in such a way that it fits into a 60.3mm tube without creating large openings. It also has as simple a structure as possible, which facilitates and accelerates its execution.
Another advantage is its high stiffness, which means that the entire spiral is not slack and can be well centered in the head. Despite its greater stiffness, the tube is soft enough to be bent in the fingers. Finally, there is also the issue of purchase. So far I have found only one online store that sells these tubes. Unfortunately, the shortest sections are up to 5m. For me, a big plus is that I can make two coils out of such a section, which is also a saving when you intend to build at least two columns.

The greatest difficulty in making such a condenser is soldering it on the water supply spigot.
The stubs are made of a 8.0x1.0mm tube and the internal diameter of the corrugated tube is 12mm. To solder it, I reduce the diameter with the help of rings with an ext. 8.0mm and external 12.0mm, which will weld onto a thin tube.

Then I solder the pins with phosphoric acid to the corrugated tube. For me, direct welding of this tube to the fittings is not feasible due to its very thin walls.
I have a good brand TIG welder, but I fail to do so. Perhaps it is possible, but a better spike is needed.

The bottom is made of a 60.3 mm bottom, to which three 4.0 mm diameter wires are welded so that after inserting the condenser into the head, it is centered.

To connect the water lines, I used quick couplings that cut off the water from one direction after disconnecting them. It makes life easier because water does not spill over the floor. However, I do not recommend this solution for people who care about every penny. The cost of two such sets is about PLN 50.

You can easily be satisfied with clamps. Two types are shown in the photo below, the one on the right is better.

Below, the head is in all its glory.

The receiving spline is made of 8.0x1.0mm tubes. It is important that when it is welded into the bottom of the lake, it does not rise a few millimeters above. This can make it difficult to empty the pond.

The silicone receiving tube has dimensions of 6.0x1.0 mm and is put on the outlet by reducing it from pieces of other tubes. It may not be elegant, but it sure is tight.

Such a thin tube has sufficient capacity and works very well with the pinch valve. Besides, it is much cheaper than the typical 9.0x1.5mm.

The valve is made of a piece of aluminum and brass and a brass screw. Material costs are a few zlotys, but it is a bit of fun on the lathe.
Of course, you can use professional KO needle valves, but the price is quite deterrent.

The description of the construction of the various versions of pinch valves can be found on the forum under the topic "Valve in 15 minutes" http://www.bimber.info/forum/viewtopic.php?t=1294

It is good to tighten the end of the hose with a stainless steel nut, for example. This prevents the end of the tubing from accidentally falling out of the receiving vessel - this can be the cause of product loss at best, and the cause of fire at worst.

Below I present a photo of a tablet thermometer. I have bought 4 pcs so far. They're doing fine impeccably.

There is ST 9290 model c. *Range: -50 ° C ~ + 150 ° C , accuracy: ÿ 1 ° C , resolution: 0.1 ° C*
Has an alarm, debt. 60cm cable. It costs about PLN 50

This is probably the end of the description of the individual elements of the column.
It is time to move on to the material cost calculations.

Estimate

nr.	element	miejsce zakupu	cena jednostkowa	ilość	Koszt wysyłki	suma
1	Keg 301	Allegro.pl	80,00 zł	1szt	30,00 zł	110,00 zł
2	Rura 60,3x2,0mm	Heco.pl	43,3zł /m	2 m	25,00 zł	111,60 zł
3	Rura 8,0x1,0mm	Heco.pl	7,0 zł /m	0,5m	wspólny	3,50 zł
4	wywijka	Heco.pl	8,60 zł	4 szt.	wspólny	34,40 zł
5	dennica	Heco.pl	7,40 zł	1 szt.	wspólny	7,40 zł
6	Śruby + nakrętki KO	Allegro.pl	5,00 zł		7,00 zł	12,00 zł
7	Pręt fi 4mm KO	Sklep Kolnex	2zł /m	0,5 m	Zakup bezpośredni	1,00 zł
8	Tamka jeziorka	Sklep Argo	1,00 zł	6x5 cm	Zakup bezpośredni	1,00 zł
9	Rurka DN12	Sklep.artom.com.pl	137zł /5m	2,5 m	13,00 zł	81,50 zł
10	Druciak Coral Max	Hurtownia Perfekt	1,60 zł /szt	27 szt.	Zakup bezpośredni	43,20 zł
11	Koszt zaworka					5,00 zł
12	Uszczelka silkonowa	Mcz.com.pl	Płyta 5,0mmm			13,00 zł
13	Grzałka 1000W	Sklep hydrauliczny	23,50 zł	1 szt.	Zakup bezpośredni	23,50 zł
14	Grzałka 2000W	Sklep hydrauliczny	26,50 zł	1 szt.	Zakup bezpośredni	26,50 zł
15	Przewód elektryczny	Sklep elektryczny	8,00 zł /szt.	2 szt.	Zakup bezpośredni	16,00 zł
16	Pianka ocieplająca	Sklep budowlany	8,00 zł /szt.	2 m	Zakup bezpośredni	8,00 zł
17	Termometr tablicowy	Allegro.pl	50,00 zł /szt.	1 szt.	11,00 zł	61,00 zł
18	Wężyk silkonowy 7,0x 1,5mm	Sklep Glass-Med	8,50 zł /m	2 m	Zakup bezpośredni	17,00 zł
19	Wąż do wody	Sklep hydrauliczny	1,50 zł /m	10 m	Zakup bezpośredni	15,00 zł
20	Opaska zaciskowa	Sklep motoryzacyjny	1,50 zł /szt.	2 szt.	Zakup bezpośredni	3,00 zł

Razem 593,6 zł

The costs of a locksmith and a welder are difficult for me to determine. So far, everything has been done at a cost "Own" or for a symbolic bottle. The first two columns were helped by my fellow lockers and welders. After purchasing a TIG lathe and welding machine, I made the column described above only by myself. I do not work in these professions, I , and at the moment I treat metalworking as a hobby, although maybe someday will start to earn some extra money on it.

Just for the sake of curiosity, please note that the cost of stainless steel components that's only about half the overall size is material costs.

A few more words should be devoted to online procurement.

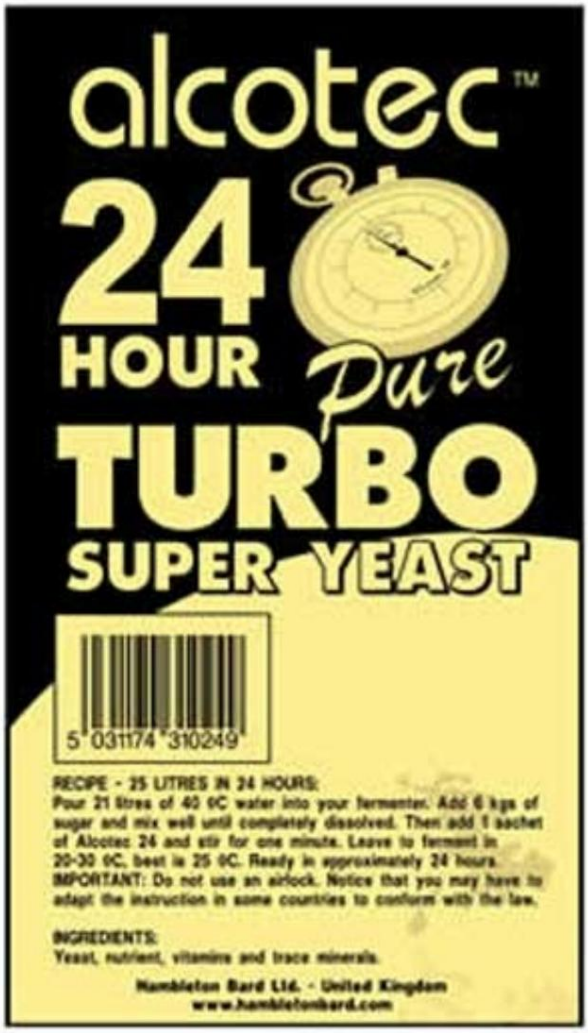
I would like to remind you once again that the artom.com.pl store sells only 5-meter sections of the corrugated tube. This can be difficult, because you don't need that much for a condenser. A good circumstance is the fact that from five meters of DN12 two spirals can be made. Unfortunately, five meters of DN8 for two condors is not too much. So when you buy a little nut to chew it up. If I was doing one head, I guess I would choose DN8.

It is worth noting that such pipes are used in the construction of heat exchangers, and there is a chance to get them in very well-stocked plumbing stores.

It is similar with the mcz.com.pl store. It is hard for him to ship on a piece of silicon rubber the size necessary to make only two gaskets. I managed to order some of the remaining episodes from the larger orders from them. It is also worth noting that they have impeccable quality goods and good prices.

How to make settings

I would like to point out that a keg with built-in heaters from the cooker is basically not suitable for cooking cereal mash. The power density of typical heaters is high and this can cause thick mashings to burn on their surface, which gives a burning smell that is difficult to remove.
Such heaters, however, perfectly cope with the so-called sugars, wines and other rare settings.
So I thought to myself that it is worth describing immediately how to make such sugar. Until recently, we used the immortal recipe 1410 based on baker's yeast. However, the spirit of progress has made it useless to rely on the old rules at the moment. For some time now, you can buy specialized Turbo yeast. They process sugar at a crazy pace, allowing to obtain unattainable so far setting power, and much better taste and aroma. Personally, I recommend ALCOTEC TURBO 24 Pure. They are available at our forum colleague @ 98%. "



They are quite expensive, but they can be used for several times more sugar than described in the description. On one package, I repeatedly made the following settings:

25kg of sugar + 90l of water + 30g of citric acid + about 3kg of ground apples

After a week, the sugar was processed. Just be careful not to overheat the setting. The fermentation is so strong that the temperature rises spontaneously to over 35C - therefore we should not close the fermentation containers.
By the way, I would like to warn you against greater concentration of sugar.
Recently, I took a risk and made the following settings on one Turbo 24 Pure:

25 kg of sugar + 75 liters of water + 30 g of citric acid without apples

Unfortunately, such a concentration had a very negative effect on fermentation. It extended it 3 times and ended with only -1 Blg.
I believe that if we decide to drastically reduce the dose of yeast, it is safe to keep the ratio of sugar to water in the ratio of 1: 4.
One more thing about the apple nutrient solution. It is definitely cheap and effective. Unfortunately, it carries a certain danger. I had a bad accident recently. While pouring sugar on the keg, I did not want to filter it from floating farfocli. I also left only 2-3l of free space below the filler cap. During cooking, the bottom scourers were covered with apple-yeast goo.
This flooded the column so that the distillate poured out through the head, I was heating with gas and was lucky nothing caught fire. Now I am more careful pouring pure sugar into the keg and leaving about 5l of free space.

Description of the operation of the home rectification column

Pour 17 to 25 liters of pure keg into a keg. Heating up 25l takes about 50 minutes - assuming that you are heating 3000 W. After boiling, the temperature on the head rises quickly and reaches about 80 * C. At this point, we should already have water cooling running - a flow of 1 liter per minute.
The receiving valve should be fully closed - a process called "flooding the column" takes place during this time. We wait for several minutes for the temperature on the head to stabilize around 78 * C.

Forerun

Collect the fore after the temperature has stabilized. The receiving valve should be set in such a way that the received liquid drips single drops. In this way, we should collect about 150-250 ml of contaminated spirit, which cannot be used for food purposes - it contains, among others, poisonous methanol, damaging the optic nerves. We end this phase by completely unscrewing the valve and emptying the lake completely (50 ml).

Consumer spirit

After emptying the pool, close the valve and stabilize the temperature on the head for a few minutes.
We wait until it reaches the lowest possible value. Theoretically, it should be 78.3 * C. Depending on the atmospheric pressure, it may be slightly different, +/- a few tenths of a degree C.
Then gently unscrew the valve and collect it at an average speed of approx. 30 ml per minute. In the beginning you can get the rate of 40ml / min should not rise at the head by 0.2 * C or more, because the quality of the distillate. In this case, close the valve and wait a few minutes for the column to stabilize again. Over time, reduce the load so that the temperature on the head is kept constant.
During distillation, you will need a measuring cup and a second hand. The end of the process is characterized by the fact that even with a slower reception (approx. 15 ml per minute) the temperature on the head rises. If we finish collecting the spirit at this point, we will leave a few hundred milliliters of alcohol in the keg. It is worth remembering that when collecting the main fraction, it is good to change the vessel from time to time, so that in the event of problems with stabilization, not to contaminate what you have already received.

It is difficult to precisely define the phase of the end of proper spirit reception from the chase phase.
When we want to get the maximum and reduce the risk of contamination, we must very slow down the reception to the droplet (approx. 5-10 ml per minute). During this time, it is often necessary to close the valve and stabilize the temperature for several minutes. I finish the process of receiving the proper spirit when, after one or the other stabilization, the temperature still rises by 0.2 * C.

Pursuit

At this point, we can change the vessel and pick up the so-called pursuit. At some point, the temperature at the head begins to rise faster and faster, because the ethanol in the keg is rapidly depleting. When the temperature on the head reaches 90 ° C, there is no point in taking away even the chase. Finally, unscrew the valve completely, empty the lake and turn off the heating. You can still get 200 ml of 80% alcohol in this way. But it will be contaminated with fuselages and I do not recommend using it for food purposes.

I pour the fore and ends into a larger vessel and when after a few distillations I have a few liters of it. I dilute them to about 40% with water, clean them with chemicals and distill them twice. You can extract more than half of a good spirit in this way.

By the way, I'd like to say that I didn't mention reflux on purpose. I believe that there are some difficulties with its optimal determination. To do this, we need to know what the full collection is at the moment.
It is also known that the RR value should increase as the amount of ethanol in the keg decreases. A lot also depends on the quality of the packing and the dimensions of the loudspeaker. For example, on tall columns with good packing, RR 1: 2 can be used to obtain a similar quality. As you can see, the matter is not easy and it is best to focus your attention on the thermometer. After some time, as we gain experience, we will know how to adjust the valve in order to protect ourselves against the unfavorable temperature increase with an appropriate safety reserve.

Possible problems during the operation of the column

1. Sometimes our single-phase electrical installation may be overloaded and heating with two heaters is not advisable. We should then disconnect the 1000W heater and work only on the second 2000W. This will extend the time to boiling and reduce the speed of distillate yield.

2. When we see the vapors coming out of the head, we probably have too little cooling. Sometimes there are pressure drops in the installation. In this case, the flow of cooling water should be increased, or heating should be stopped.

3. Strange changes in temperature at the head may be caused by flooding the column. In such a case, one heater should be turned off, or it is the best to stop the process and wait for the column to drain. Sealing remember to pour clean presets when needed filtered presets. Never fill the keg completely, always leave a 5l reserve for foam while cooking.

4. It may also be that the column stabilizes at 80 ° C or more. The reason for this may be too strong heating causing partial flooding of the filling. The solution is to reduce the heating and possibly looser packing of the filling.

5. The consequence of this may be the complete flooding and overflow of the distillate through the head. The heating should then be turned off immediately.

6. When we notice that the reception of the distillate begins to slow down by itself, the reason may be the valve clamping the hose. He has such tendencies sometimes. It must then be readjusted.

7. The final rule is not to leave the distillation room.
Thanks to this, we can quickly react to various unforeseen events, such as the beginning of a fire or something else.

Activated carbon filtration

The obtained spirit, despite the fact that it has a concentration of 95%, may not yet be very perfect in taste and smell. To improve its qualities, it is good to clean it with activated charcoal.

There are different schools of filtration. The easiest way is to pour the charcoal into the vessel with the alcohol and leave it for a few or more days in a cool room. It's a good idea to stir them up from time to time. With this method, a coal dose of about 50 g per liter of spirit is sufficient. Unfortunately, this method dyes the alcohol a dark shade. Therefore, it requires clarification, i.e. straining through a filter. Dust masks available in technical stores are perfect for this purpose. Various gases or coffee filters are not the best. The second way is to build a filter in which we replace the carbon cartridge from time to time. It must be remembered that the carbon filtration process is all the more effective when it takes place at low temperatures and when it is carried out as slowly as possible. It is also worth mentioning that 95% spirit cleans worse than diluted with water, for example up to 40%. For final dilution, I use publicly available still, low-mineralized water in 5l containers.

A lot of knowledge about carbon filtering can be found on the forum in the topic: *Increasing the efficiency of carbon filtering* http://www.bimber.info/forum/viewtopic.php?t=50

How to build a simple carbon filter?

A jar and two silicone tubes are enough for this.

Secure the ends of the tubes with a piece of fabric and wrap them with thread.
In the photo below, I have used special plugs with cotton pads

Holes should be made in the lid with a diameter slightly smaller than the silicon tubing.
When the holes are well made, there is no fear of tightness. I have already made a few such filters and nothing was running. The holes are quite difficult to drill, because the wall of the lid is thin and it is easy to tear it off with a drill. They come out best by punching with special punches turned on a lathe.
After threading the hoses, place the tip of one of them at the bottom of the jar, and the other just below it lid. Then we cover everything with coal and turn it off.

Place the vessel with the alcohol for distillation at the highest level, while the jar and recipient vessel at the bottom.

Now it is enough to pull the tube with the tip from under the lid of the jar with your lips and thanks to the prepared one vacuum, the desytylat will pour itself over the jar and start dripping into the receiving vessel.

The tubing should be gently clamped with even a paper clip so that the filtration is droplet-like.
Below you can see the drip clamp used for this purpose.

The ends of the hoses should be well weighted, which makes them easier to arrange.

With the use of larger jars and not too much distillate, there is a fear of causing
large losses will result from coal saturation. This is true. A large part of the alcohol can be recovered by ,
passing clean water through the filter. It will then absorb a large proportion of the alcohol. You can do it later
add to the next distillation.

Chemical cleaning plus second distillation.

Another way to improve the quality of the distillate is dry cleaning followed by a second distillation.
Of course, you can improve the quality without chemicals, only a second distillation with a possible earlier one
carbon filtration. Remember that we add chemicals only to the distillate, in no case to
sugars or mash.

For this we need baking soda (food) NaHCO3, and potassium permanganate, KmnO4
We can buy soda at any grocery store, and smaller amounts of permanganate at a pharmacy. Order
the procedure is as follows:
We dilute the distillate with water 40% or less. As the first, we add thoroughly dissolved
baking soda. Dosage is 10g per 1l of 95% distillate, so seasoned distillate should wait for several hours
after this period, add 1g of dissolved potassium permanganate per liter of 95% spirit.
Again, you should wait at least several hours to several days.
turns dirty brown, clears with time, losing sediment. After this process, we can carry out
second distillation. The order of dosing is not accidental and should be followed. Chemical effect
it is very distinct. The distillate loses the aftertaste of moonshine.
I am not a chemist, , but information from people dealing with it shows that food soda
even if heavily overdosed, it decomposes during cooking and is harmful to your health. Not completely
there is a clear case with transamanganate, they are argued that an overdose can have a negative effect. Yes
so I do not advocate the use of chemistry, but I also deny it, especially as it is a process used in
an industrial scale in the production of the Polmosian census.

We can learn a lot more under the topic: *Chemical cleaning of raw distillate*
http:// www.bimber.info/ forum/ viewtopic.php?t=217&postdays=0&postorder=asc&highlight=chemia&start=0

Third distillation

In order to achieve the quality of premium vodkas or better, I used sometimes third distillation and double distillation
coal filtering.

Note! During the second and third distillation, remember that the distillate should be diluted to some extent
at least 40%.

How to assess the taste of our product?

95% percent distillate should not be tasted. It blocks taste receptors very quickly and
olfactory, which prevents good judgment. It is best to dilute it to 5-10% and search for it
unfavorable aftertastes. If they are not felt then we have the absolute.

How to check the "strength" of our product?

The cheapest is to buy a bio-based alcohol meter or another cheap alcohol meter, check what it shows on the spirit from the polmos
and compare with our distillate. Remember that the temperature of both samples is the same. Generally cheap
the available alcohol meters rarely show the% correctly. Therefore, they should be "calibrated" on
store spirit. Approved alcohol meters are expensive and quite difficult to access. You should also remember
that the alcohol meters strongly distort when measuring cold and hot distillate, Most often
the optimal measurement temperature is 20 * C.

What are the costs of producing spirit on a homemade column?

If we count the costs of sugar, yeast, nutrients, energy, water, activated carbon, it turns out that
double distillation is quickly approaching PLN 15 per liter. All in all, maybe that's not much at the store price
about PLN 80 per liter. However, when we take into account the time we have to spend on producing this liter,
it looks quite different. After adding and averaging the preparation time, make the preset ,

warming up, stabilizing the reception of foreruns, tails and proper reception, it turns out that it comes out time over 2h. This means that it is really just a hobby and not some illegal super profit business. I repeat again, there is no business at home, only hobby fun for a unique vodka or tincture. If anyone thinks that we will do this to someone wedding supplies, let him sit down and spend several dozen hours on the distillation himself, without moving from columns.
Then it is better to go to Podlasie, where thousands of liters are produced in the dark refuges of the forest real rye, not very smelling moonshine.

For now I am finishing up and I would like to thank my colleagues **@Citizen Kane, @a_priv** and **@Astemio** for valuable comments and corrections. I do not close the topic. I'd rather discuss it on forum to a wide group of people, before going to the Distillation and Rectification section.