

Information on the structure and Commissioning of "Hilde"

Material:

- 1 piece of Plexiglas (or acrylic or aluminum or steel or brass, depending on request) with the specified dimensions.
(Source for acrylic: Bauhaus or Obi)
- 1 piece of brass pipe with the specified dimensions and 4mm diameter of the spool
- 1 piece of brass pipe for the Pistons work with the specified dimensions for the working pistons. There, it is a larger diameter for the Pistons to work than for denSteuerschieber, because the machine is "meaningful". But this is not necessary. I voted in favor 5mm strong brass pipe used.
(Source for brass tube: Bauhaus or Obi)
- 1 piece of copper sheet 0.5 mm high (or brass sheet metal or aluminum or steel) for the connecting rods and valve rods.
(Source of sheet copper, brass plate: Bauhaus or Obi)
- 1 piece of electrical cable installation for the crankshaft, for example NYM-3x1, 5 qmm
(Source for brass tube: Bauhaus or Obi)
- 1 flywheel e.g. Manufactured from a ball
- Some small pieces of plexiglass for the manufacture of bearings for the crankshaft and the attachment of the crankshaft on the axis of the flywheel
- A piece of wood for the bearing pedestal on which the drive is mounted
- A piece of a wooden panel on which the whole machine is being built.
- Something sheet copper or brass plate for the connecting rod and the attachment of the connecting rod in working Pistons

Building the machine

Here is a brief description of the structure and modus operandi in building. First you drill the 4 holes in a piece of Plexiglas (or acrylic, aluminum, iron), according to the blueprint. For this one needs only a drill stand and the matching drills.

The brass pipe for the working piston is at the rear end sealed with solder. Taking a different material than brass pipe work for the Pistons, then you can either round material, or you have the rear end in other ways away (for example, with 2 components glue or silicone adhesive). On the front end will work in the Pistons a piece of sheet copper are soldered. To him is then attached to the connecting rod. Since I am a small piece of copper wire of the electrical cable used, I have this hole drilled with 1.3 mm.

The fiscal slide is equally processed. The trick is in the spool but that he side receives a small hole which is not entirely through the tube Messi will be drilled through, but the tube only on one side opens out. What is with this hole is all about, it becomes clear if you look further down the functioning of the machine durchliest. If the crankshaft according to the blueprint drawn up, then you can position this side bore the blueprint shows the machine varies, so you should with the drilling wait until the machine has been completed. One has the spool and the Pistons as far as preparation work, the connecting rod and the linkage of the tax slider according to the blueprint produced at the two pieces fastened.

Now if you look at the two pistons in the holes in the Plexiglas hineinsteckt,

they will first have to all corners and edges tendency to, but with a little oil, Vaseline and some 100 times out and forth, they are grinding.

If they are reasonably fit, you can crank out a piece of copper wire according to the blueprint bend. The crankshaft is the wave of the flywheel connected. For the axis of the flywheel, I use also an M3 threaded rod (source: You know, the Bauhaus or Obi) and everything will be with some M3 nuts together.

Now we need to 2 bucks situation for the wave of the flywheel to be, the stock Klotz, the plexiglass block bears the baseplate and a warehouse, the free end of the crankshaft abstützt.

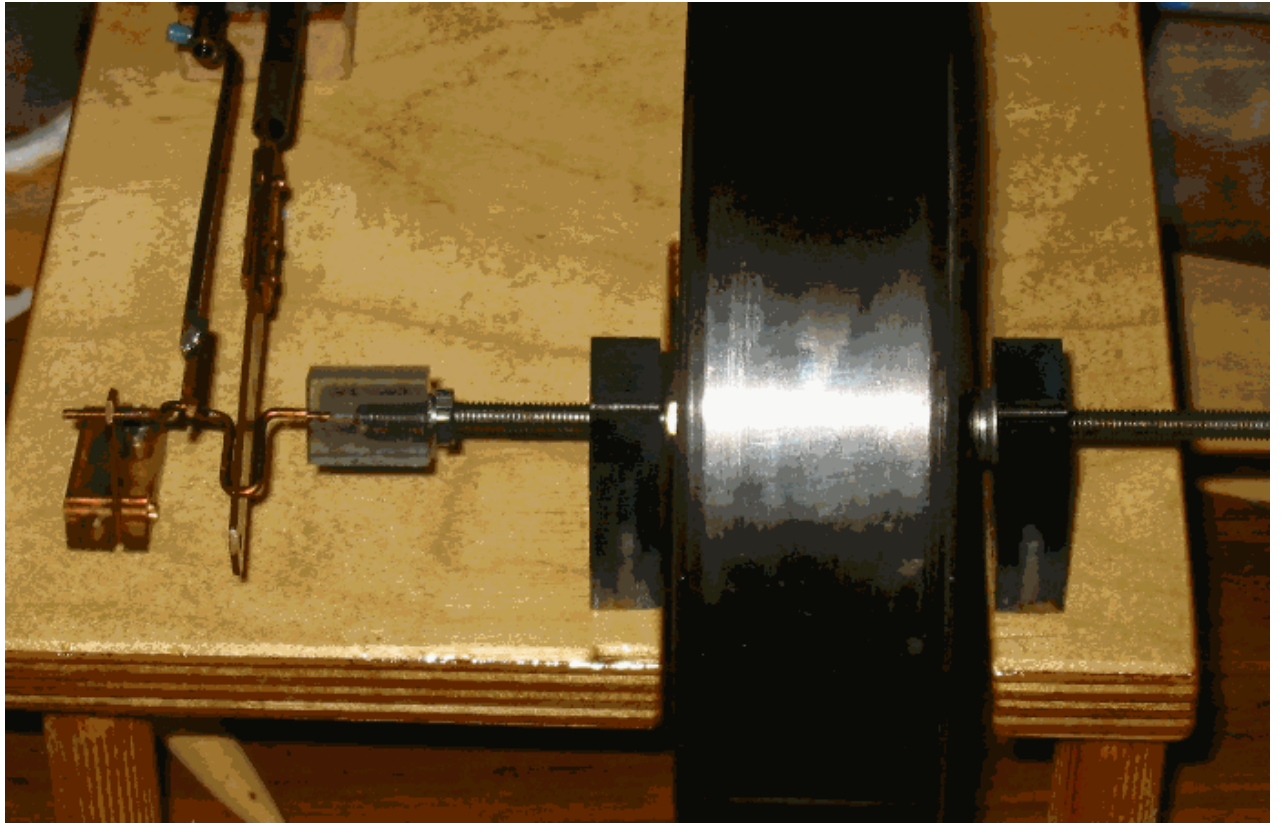
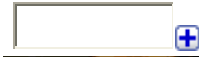
The connecting rods are placed on the crankshaft "also been" and the whole machine is assembled.

If you get the lateral hole in the spool has not yet drilled, it is now time the correct position of the hole to determine and to drilling. To determine the appropriate position for the hole was at this point to the statements under "operation of the slider control" below text.

Now it is necessary for the machine, which will certainly return to all corners and edges stuck, once properly run. It turns you on the flywheel and with much oil and a little patience is running it minute-by-minute bit easier. It is also not bad, if they also have a lunch or overnight with a small electric motor (12 volt motor) drives.

If they are nice easy runs, then you can for the first time either with air or steam operate properly.

Since a few images more evidence than 100 words, here are some detail shots.



A look at the powertrain.

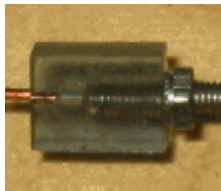
From left to right we see:
The support of the free end of the crankshaft



The crankshaft with the "also been" slider rods and the connecting rod



The attachment of the crankshaft on the axis of the flywheel



The axis of the flywheel



The stock of the flywheel from plexiglass



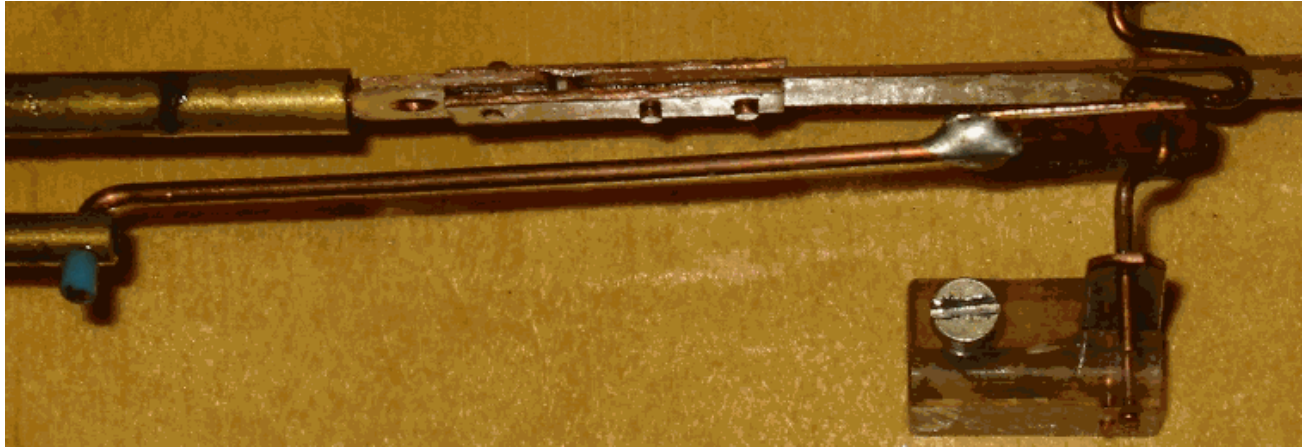
The flywheel and the 2nd Camp of the flywheel can be seen on the overall view, and therefore give me the photos here.

Here's a different view of the powertrain



I believe that I am here to detail can save shots. From front to back are to recognize
The support of the free end of the crankshaft
The crankshaft with the "also been" slider rods and the connecting rod
The attachment of the crankshaft on the axis of the flywheel (plexiglass)
The axis of the flywheel
The stock of the flywheel from plexiglass
The flywheel

Here another view



From bottom to top you can see:
The slide rods from copper wire (electric cable).

On the right side is a piece of sheet copper angelötet, based on the crankshaft "also been" is.

On the left side, you see how the linkage with the control valve is connected. The small blue piece of plastic serves as a backup so that the linkage is not out of the hole can work out and drop.

The plastic is a small piece of insulation of electric cable.
It is the work of connecting rods and pistons.

In the Pistons work is a piece of sheet copper are soldered. To him, the connecting rod attached. With the help of 2 small copper plates, which rigidly with the connecting rods are riveted, the connecting rod then transmits the movement of the working piston to the crankshaft.

Here is a series of pictures, the movement of the machine should clarify. The recordings were each 90 degrees rotation of the flywheel added.

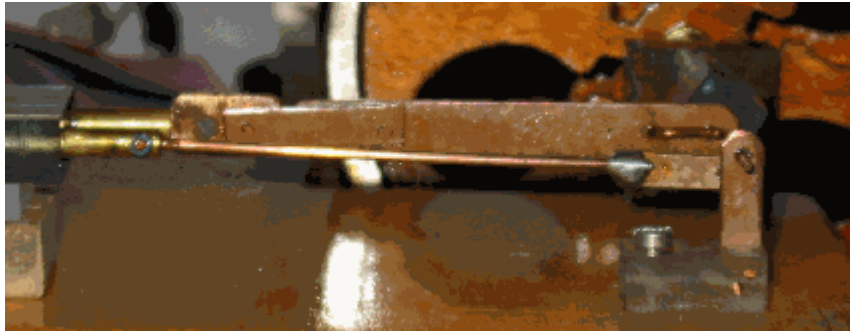


Bild 1



Bild 2

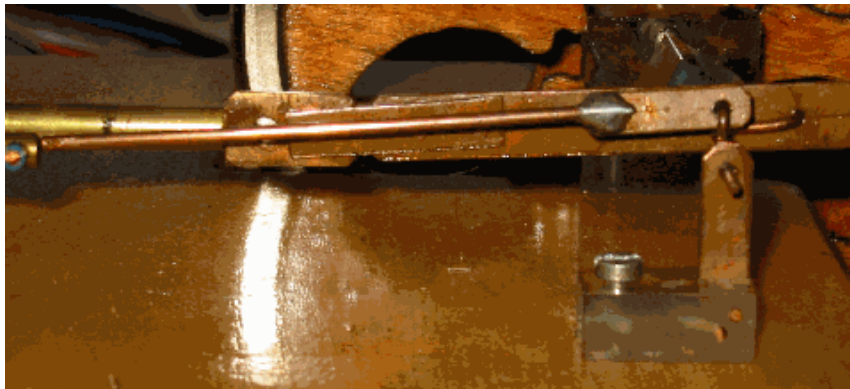


Bild 3

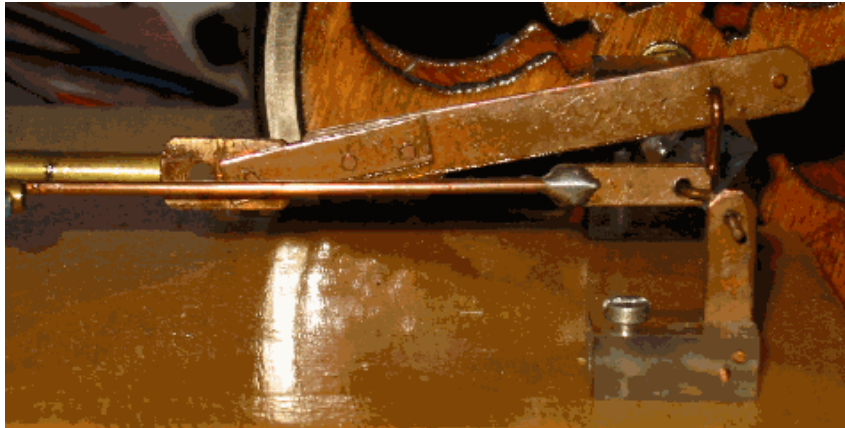
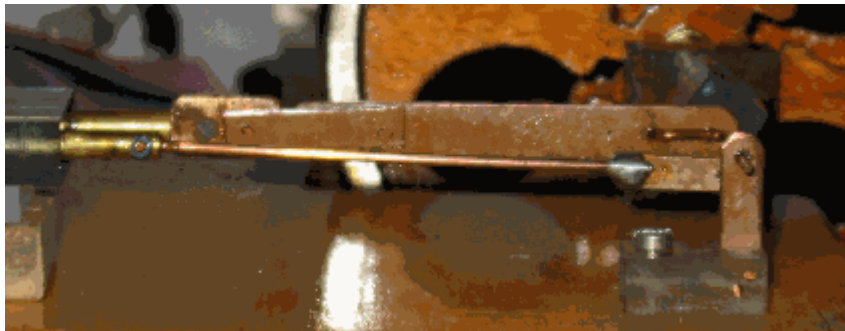


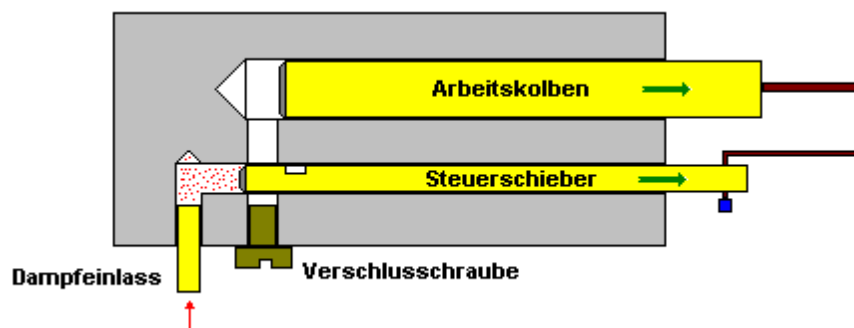
Bild 4

Operation of the slider control

Although the slider control is very easy to realize, prepares their understanding obviously some problems, because most inquiries came after a detailed description of the function control. Here are a few photos, sketches and a few words about the way they work.



In this position of the crankshaft is the work of the Pistons and control valves in the position shown below.



Description:

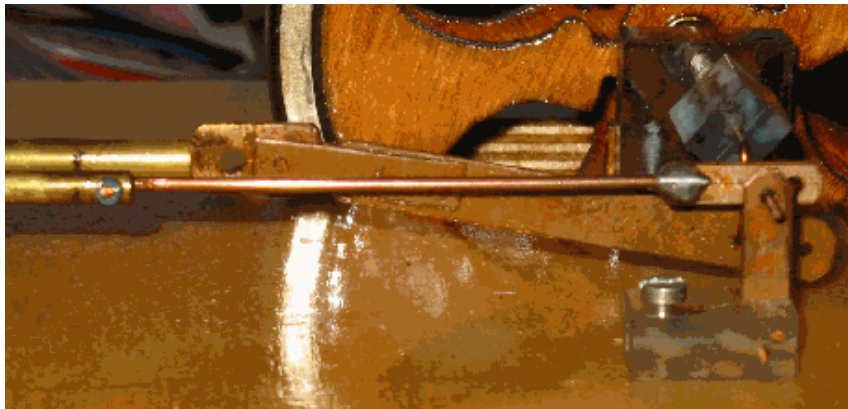
- The work has its piston reaches bottom dead center and begins with the momentum of the flywheel to the right to move.
- The tax slider also moves to the right, but just closed the steam access to

the working cylinder. But it will in the continued rotation of the crankshaft, the steam inlet in the working cylinder release

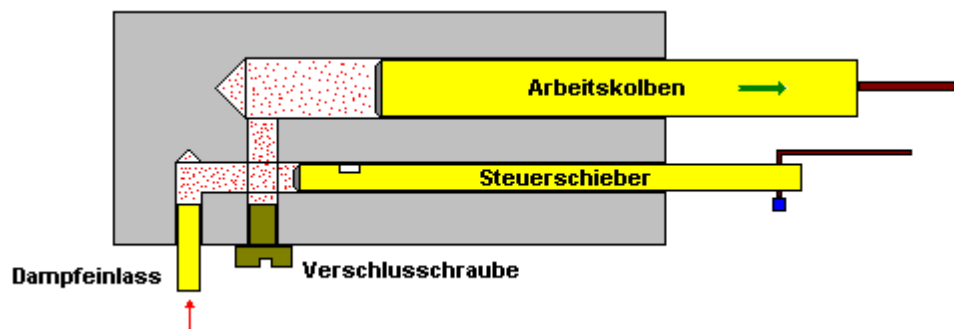
Note:

The left opening of the slider control and the work cylinder are both closed (eg zugelötet). The right-opening of the tax slider is open (see below ground).

The left opening of the flask work should also be open, so that no excess pressure of trapped air can build up when the work heats Pistons.

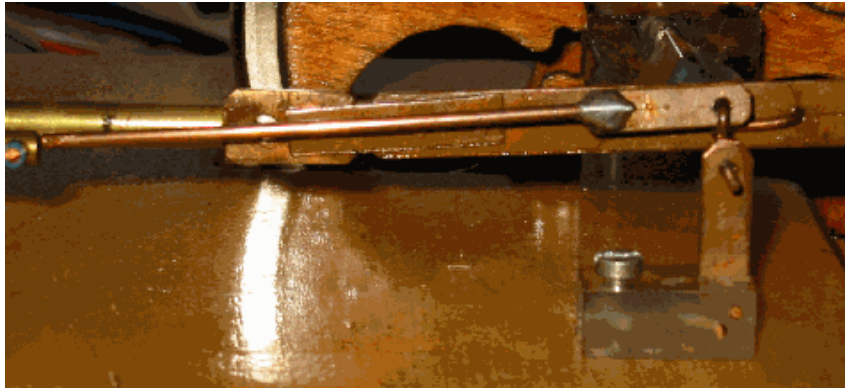


In this position of the crankshaft is the work of the Pistons and control valves in the position shown below.

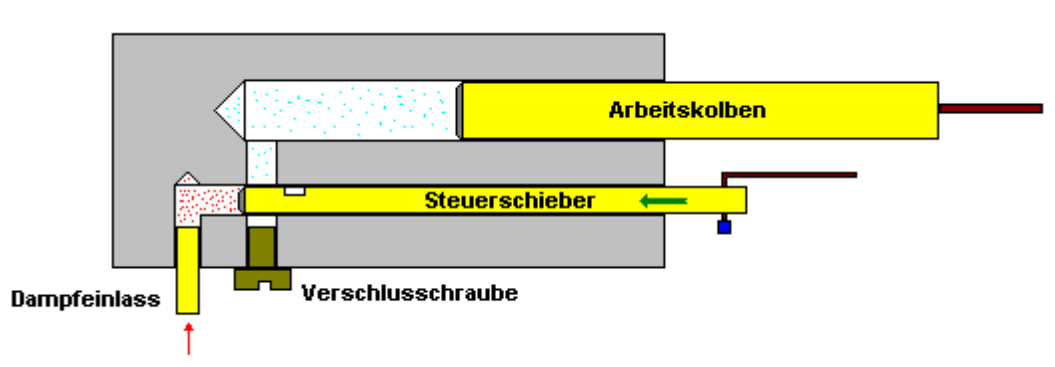


Description:

- The influx of vapor moves the pistons work, turn right and drive on the fly.
- The tax slider has reached the TDC and has paved the way to work cylinders for the steam released.

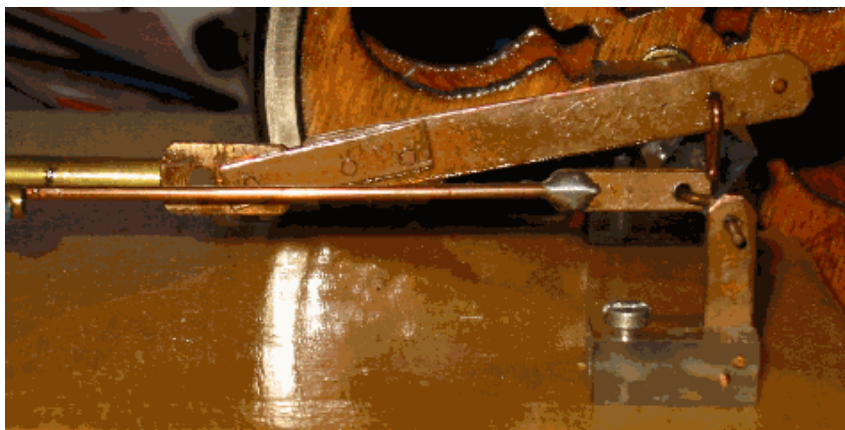


In this position of the crankshaft is the work of the Pistons and control valves in the position shown below.

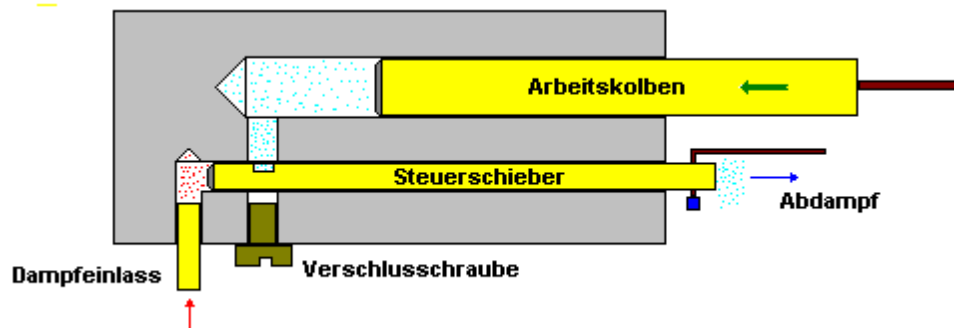


Description:

- The work has the piston reaches TDC and will be driven by the flywheel now move to the left. The steam has its work and has cooled.
- The tax shifter moves to the left and has access to the work cylinders for the steam off again.



In this position of the crankshaft is the work of the Pistons and control valves in the position shown below. In this position, the trick with the lateral hole in the spool to bear. With the help of this hole is now through the pipe through the control valve of the work cylinder exhausted.



Description:

- The Pistons will work moves to the left, driven by the flywheel. Through these Bewegung the steam over the lateral hole in the spool and through the tax-free into the long slide down.
- The tax slider has reached its bottom dead center. In this position is the lateral hole of the slider control before the opening to the working cylinder. The steam can be processed by the tax-free to slide through reach.

Note:

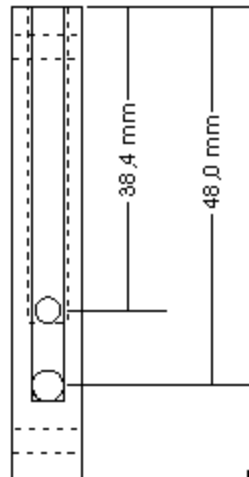
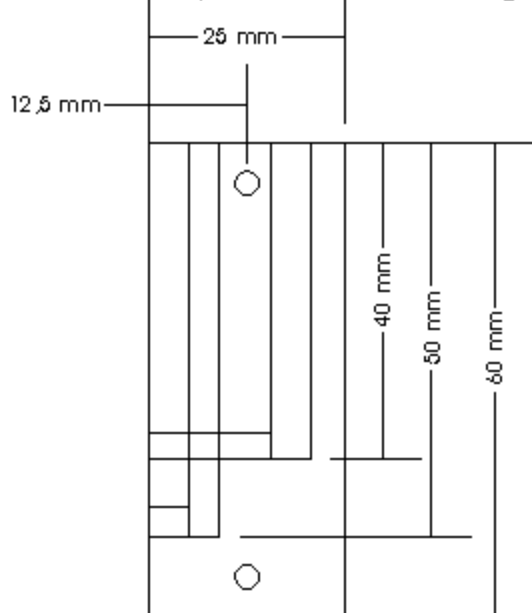
The exact position of the lateral hole in the spool can easily identify by using the machine in this position and now spins at distant Verschlusschraube through the hole through the position at the helm slide marked (eg with a small drill). On the opposite side of this marker then you drill the hole, but as already mentioned only so deep that only one side of the control slider receives an opening.

By varying the position of the hole or by using a long oval hole, the timing of the engine change. The extent to which these changes are positive or negative impact on the operating characteristics of the machine effect, I can not judge because I have no experience in this've collected.

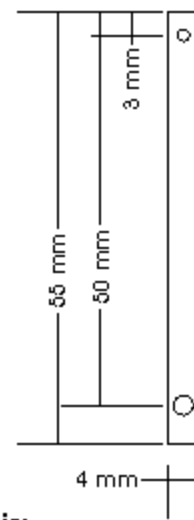
Good luck with the replica Hopes

Hans Krause

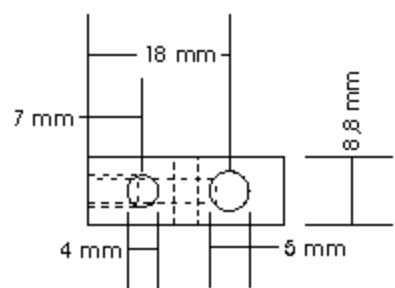
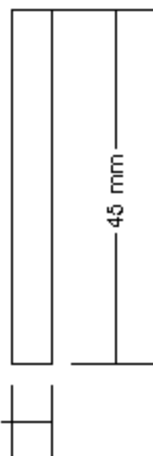
Zylinder und Schiebergehäuse



Schieberkolben aus Messingrohr



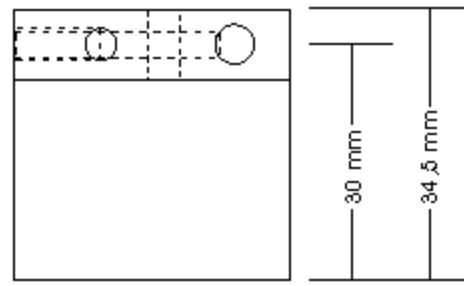
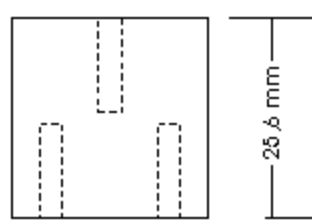
Kolben aus Messingrohr



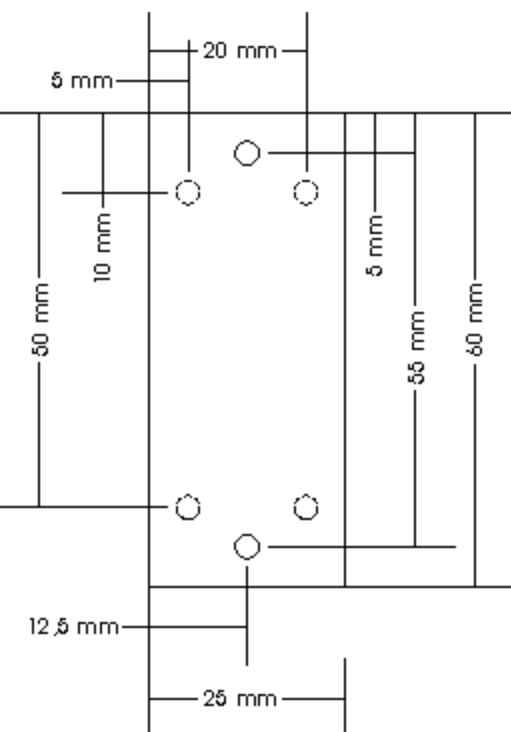
Hinweis:

Der Kolben und der Schieberkolben sind am unteren Ende mit Lötzinn verschlossen, das obere Ende des Schieberkolbens bleibt offen. Das untere Loch des Steuerschiebers (das grössere) wird nicht ganz durch das Messingrohr hindurch gebohrt, sondern öffnet es nur zum Arbeitszylinder hin.

Lagerbock für Zylinder und Schiebergehäuse für eine Achshöhe von 30mm



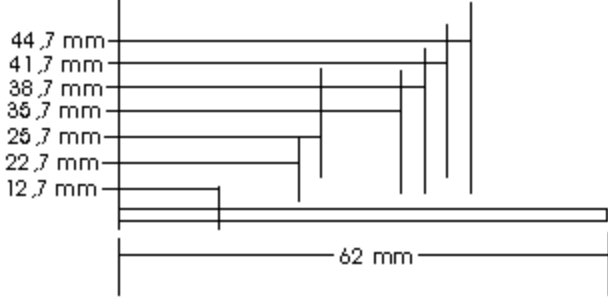
Achshöhe 30mm



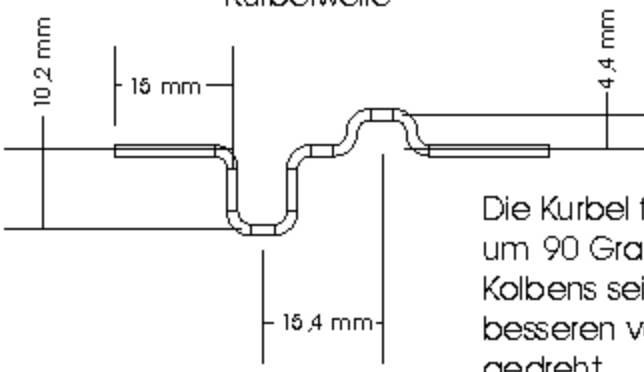
Tip:

Zum Ausdrucken alle Seitenränder auf 1mm einstellen.

| | |
|------------------------------|------------------------|
| Dampfmaschine "Hilde" | |
| 14.12.02 | Dipl. Ing. Hans Krause |

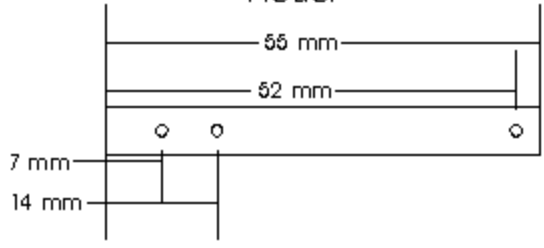


Kurbelwelle



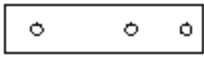
Die Kurbel für den Schieber muss um 90 Grad versetzt zur Kurbel des Kolbens sein. Hier wurde sie zum besseren vermaßen um 180 Grad gedreht.

Pleuel

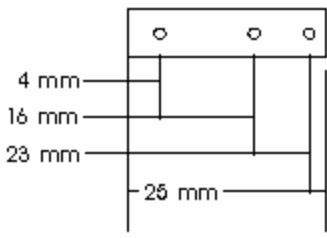


Kupferblech 1,3mm

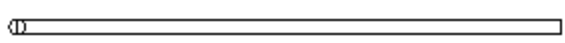
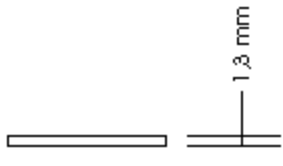
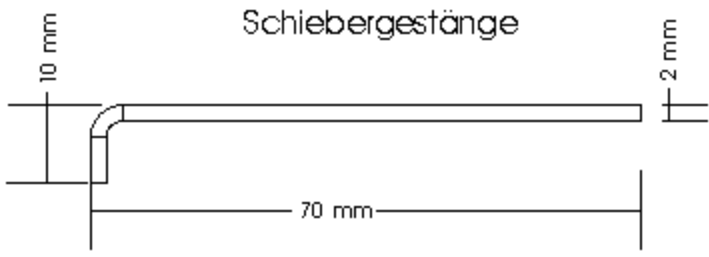
Diese Teil wird in den Arbeitskolben eingelötet



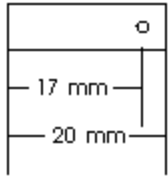
Kupferblech 1,3mm



Schiebergestänge



Das Kupferblech wird an das Schiebergestänge angelötet



Kupferblech 1,3mm

Tip:
Zum Ausdrucken alle Seitenränder auf 1mm einstellen.