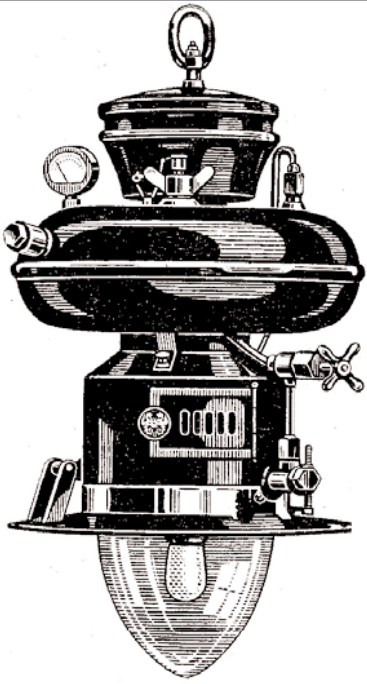


## Petromax 834 renovation

By Wim van der Velden



As I have restored a reasonable number of Petromax model 834/835 donut lamps, I want to share my experiences with the reader.

The differences between models 834 and 835 are mainly a matter of size, so my observations apply equally to both. If this is not the case I have made separate notes. There are of course other models that are more or less similar (as for instance the Petromax 790, a 834 with copper tank.) But I leave it up to the reader to match the details on his or her lamp model.

The numbers of the parts and in the text refer to the component drawing. In principle these lamps function in much the same way as any other pressure lamp such as for example the Petromax 500 cp model 829.

### **Important:**

These lamps are **kerosene / paraffin** lamps; using them with any other fuel is dangerous!

### ***Main parts of the lamp***

The Petromax donut lamps consist of primary and secondary groups of parts:

Fuel tank

Pressure gauge

Pump

Air / filling cap

Fuel system (97)

Tank

(Main) fuel tube with valve

Generator spiral with filter

Vaporizer

Mixing chamber (95)

Flow regulation

Burner head

Pre heater ring (9)

Ignition

Main chassis

Sub chassis

## Fuel tank

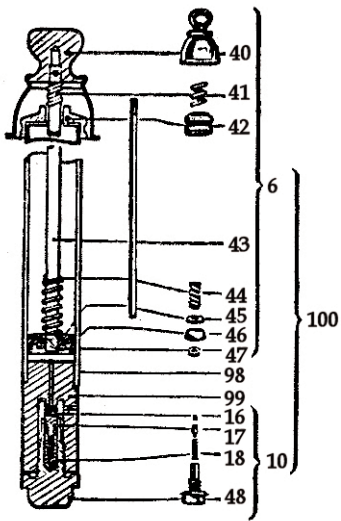
The fuel tank is made of galvanized steel with three support legs, an air pump, fuel pipe connection, a pressure gauge and filler cap.

To check the integrity of the tank I advise the removal of the old paint. Once this is done any corrosion present can be dealt with and any dents can be filled with solder.

For a good finish I advise a 2-component spray paint or a good car paint.

The three support legs are soft soldered to the tank and should be checked carefully because often rust is formed between the legs and the tank due to a bad or damaged solder connection.

## Air pump



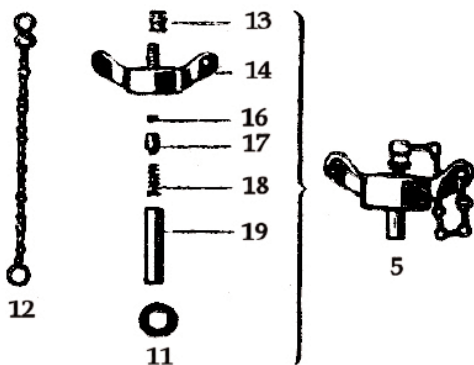
An air pressure pump is mounted in the tank. It is fitted with a clamp to press the spring (41) loaded knob (40) against the pump body. This feature has a minor drawback: because if the pump valve (10) lets air pressure escape from within the tank, one can't spot this by observing the movement of the pump plunger.

The pump valve is mounted on the end of the pump tube accessible from outside the tank. This gives easy access to the air valve.

This valve is a difficult one to service, it has to be very clean since the sealing (16, 17) and spring (18) are a close fit inside the valve body (48). Note: these same parts are found in the Filler cap valve.

Between the valve main body and the pump body there is no seal. Since the sizes of the parts are the same as a Petromax 500cp lantern these modern parts can be used. Both springs 41 and 44 will give a smooth pump action.

## (Air) Filler cap



The filler cap has two functions:

A) To provide a closure to seal off the pressure within the tank

B) To provide an alternative air inlet valve so that the tank can be pressurized by using a bicycle pump.

The valve itself (16, 17, 18) is of the same size as that of a modern Petromax 500cp lantern pump, part 19 doesn't fit always.

## Pressure gauge

The pressure gauges exist in at least three versions.



The picture shows two versions; the third one is like the one on the left but has a copper cover to the lower part of the scale inside the glass. So it looks like the one on the right but with a full glass front.

The back of the full glass version can carry the old style (pre 1943) monogram of Ehrlich & Graetz.

The text on the scale of left gauge is: PETROMAX Made in Germany, the right has no text on the scale; on the front it says : ORIGINAL PETROMAX GERMANY

They are hard to restore unless you know all about pressure gauges and have the right tools. A clockmaker can remove the indicator from its shaft, then the scale can be taken out. The gauge then looks like this one:

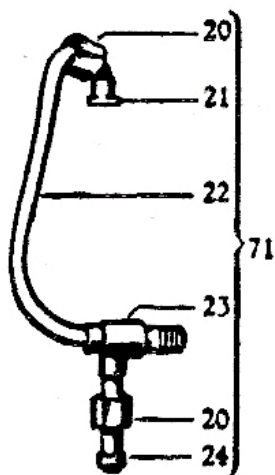


The beginning and end of the hollow spring are soldered.

These points can be leaking air. Any adjustment or calibration is not possible.

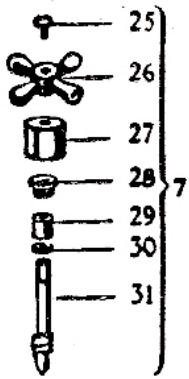
Photo:Willi Springmann

## Fuel supply



A tube inside the filler opening of the tank ensures that the tank can only be filled to about halfway. Because of this the tank contains a large volume of compressed air, as a consequence one has to pump up to operating pressure only once. The lamp then will burn until the fuel is consumed.

The air pressure (2 bar or 30 psi) forces the kerosene via a two part fuel tube from the tank to the burner (parts 22 & 63). This fuel tube in the tank (63) contains a small filter at the bottom end. This filter will almost certainly have to be replaced. All the original filters are of a rolled up steel wire gauze and a replacement can be made by rolling up a suitable piece of copper or brass wire mesh or gauze.



All fuel tubes are fastened by means of conical unions and a union nut without any sealant being used. The fuel tube 63 is held in place by main fuel tube 22. This construction gives more than one connection that has to be air and fuel tight. All the jointing surfaces have to be smooth and clean.

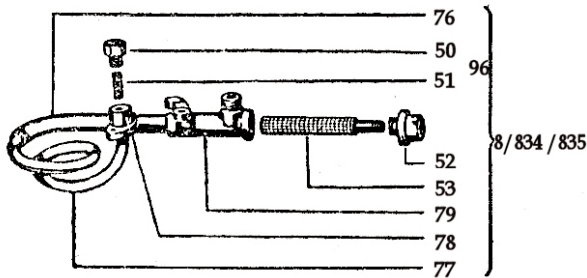
Fuel tube 22 incorporates a main valve (7) which being a needle valve provides a positive closure. This valve has a packing gland seal (27) and before dismantling the valve you should be certain you are able to replace the packing sealant. In my experience it is rare for this gland to leak much and normally any leaks here can be contained by tightening the gland nut until any leaks stop and the valve will be just stiff to turn.

When the lamp is in use this valve will be hot and when shutting down the lamp you will close the hot needle valve. After cooling down due to the temperature difference the valve will not open easily.

So before pressurizing the tank and filling the pre heater ring open the cold valve gently because it isn't certain that the valve will open smoothly when hot again.

The best way to clean the old copper and brass parts is to soak them for some hours in "Anti chalk" as used for bath rooms and kitchen sinks.

### Generator group



Together with the air mixing tube (95) the generator group 8 forms the heart of the lamp.

Kerosene is fed via fuel tube 22, passes a filter at point 79 and finds its way to vaporizer 96.

This filter (53) has a 15mm long threaded part at the end so it can be unscrewed by means of a special key.

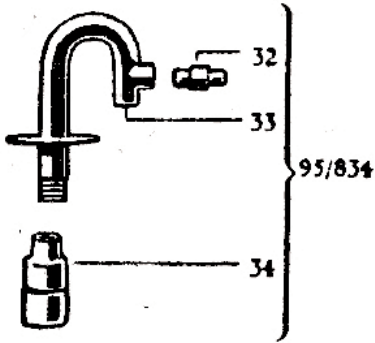
This key is nearly always missing on a second-hand lamp. The original thread is 6mm diam., with a 28 Tpi (Threads per inch) pitch and a thread profile of 55°. This is not a standard thread. Like other companies E&G made their own thread. In the appendix there is a drawing of the key and filter with a different more standard thread (M6x1).

Original 200 CP vaporizers (50) are made out of steel and have a slightly hollow top. Also they have a small steel filter gauze inside. Being made of steel they are often rusty and /or worn out. New Petromax 250CP vaporizers will normally fit and a small filter gauze can be made from copper or brass gauze.

These filters have a dual purpose because in addition to providing a filter function they also aid heat transfer within the generator to better vaporize the kerosene.

This type of hanging lamp normally doesn't have a pricker mechanism to clean the vaporizer jet so a hand operated pricker is needed. Always make sure the jet is clean before lighting a lamp because once fired up they are too hot to handle.

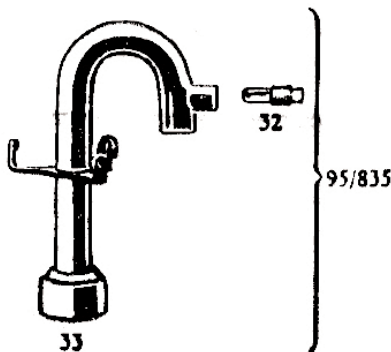
**Mixing tube (95)**



The mixing tubes of Petromax models 834 and 835 mainly differ in size and the way they are connected inside the lamp.

Both have a flow adjustment by means of a paddle on screw 32; check the condition of the paddle inside the mixing tube first before turning the screw. If the paddle and position of it looks good leave the screw in place at least until the first run. They easily break or damage when trying to remove them.

The nozzle or mantle carrier mounting (34) of a Petromax model 834 can be found in at least two versions.



The “old type” and the “new type”.

The old type only accepts old style nozzles. The new types can be fitted with a modern 250cp Petromax nozzle.

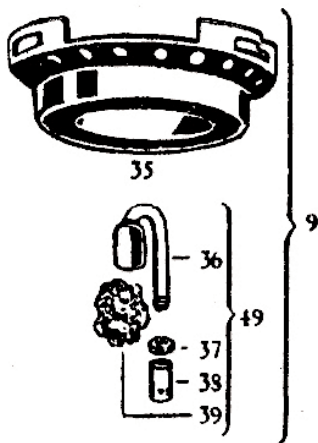
The brass mounting (33) can be unscrewed from the mixing tube in both (834) versions.

Petromax model 835 accepts modern 500cp Petromax nozzles.

The brass mounting (33) is fixed on the mixing tube and is not removable.

Since old lamps without globe are frequently placed on the ground sitting ON these parts be sure to check them very carefully.

**Pre heating**



Pre heating is effected by means of a white enamelled steel circular trough (35) that heats up the vaporizing tube and the generator.

This trough is fastened to the main body by means of three bayonet fittings.

Filling the trough with spirit / alcohol can be done by opening the little door on the lamp and pouring the spirit down a small opening into the trough.

The igniter (49) is fitted to pre-heating trough. This small device fills with spirit and provides a small flame at the lower end (38). This flame ignites the kerosene gasses and so the mantle.



### ***Main-chassis and sub-chassis***

I have called the main cast iron body the main chassis. The generator is mounted on this part for instance.

The sub chassis is the enamelled outer case of the lamp.

It is worth noting that the tank is mounted to the sub-chassis which is in turn mounted to the main-chassis with four small screws (5/32" dia., 32 tpi).

Because the weight of the lamp hangs on the sub-chassis it is important to check these four little screws.



The picture shows an un-restored main body with the small chimney and generator. On the top view (left) at the front, one of the small screws is seen as well as the filling opening for the pre heater trough. In the bottom view (right) the three prongs can be seen for the pre heater trough.

## Labels

Some examples of labels that can be found on the lamps.



Photo: Neil McRae

## Extra's

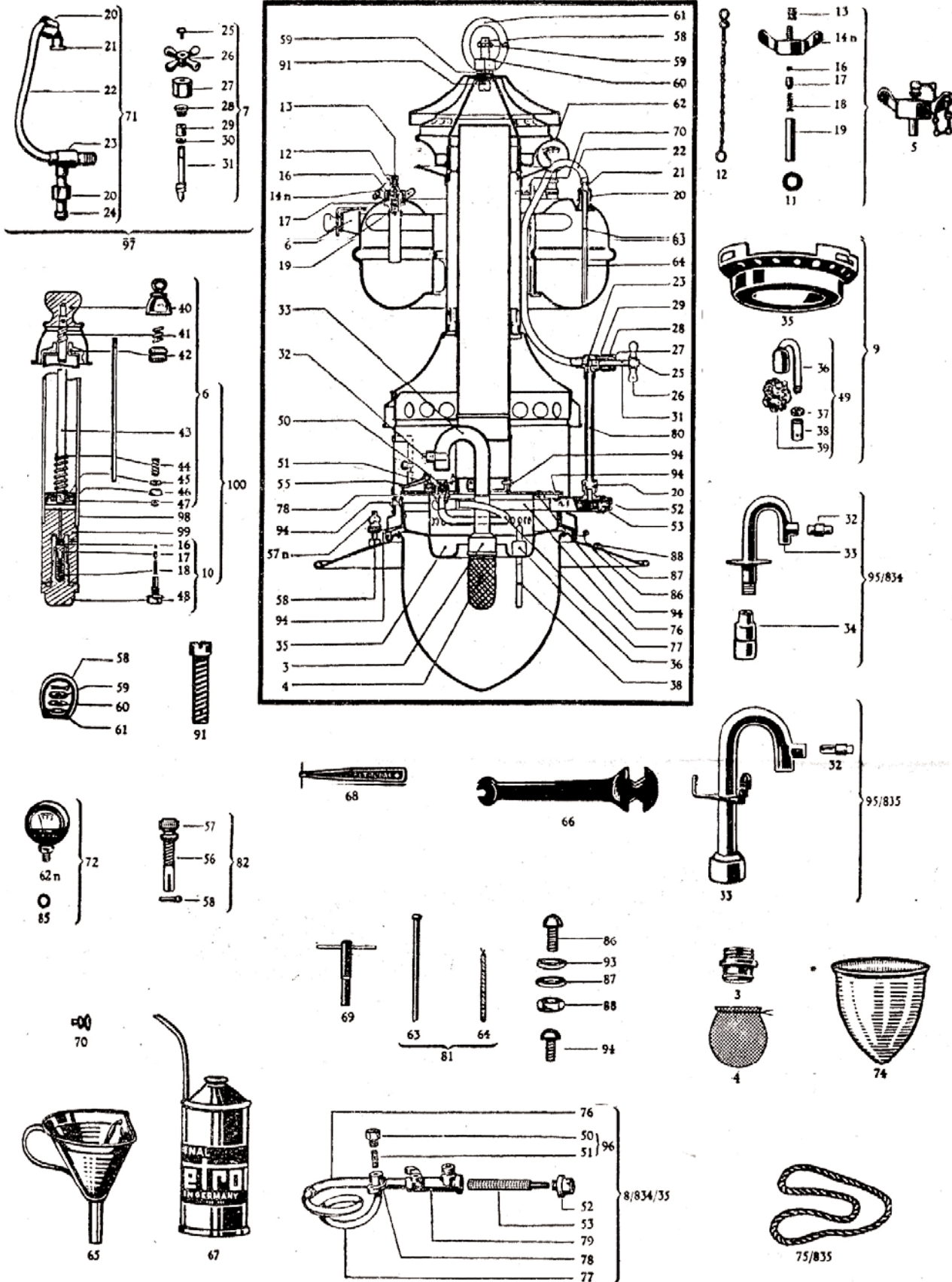


I have had the opportunity to make drawings of the extra tools and spare parts that originally were delivered with this type of lamp.

These drawings are in the appendix that follows, so you can reproduce them if desired.

The main Parts List on the following pages is from the original manual of the model 834 and 835, but it shows a Petromax 836 donut lamp!

Wim van der Velden – October 2004 - Author  
Neil McRae (English spelling and grammar) – English version  
Erik Leger – October 2004 – German Version  
Worldwide copyright 2004, W.J. van der Velden



**Petromax**

**Instructions for Use of Petromax-Lamps**

No. 834 /250 CP

No. 835/500 CP

The lamps are meant for Kerosene/Paraffin only.

1. Remove filling screw 5, insert funnel 65 and pour paraffin into the container. The filling is completed as soon as the paraffin is seen to remain in the funnel. Replace filling screw.
2. Take care that valve 7 is closed by turning to the right.
3. Tie the "Original Petromax" mantle to the nozzle 3, screw the latter into gas chamber 34. Screw pilot tip 38 so to lighter 36 that the small hole points to the mantle.
4. Put the glas-globe 74 into the reflector.
5. Pump air into the container with pump 6 until the indicator of the pressure gauge reaches the red mark.
6. Pour Methylated Spirit into the heating cup 35, which is covered by flap (Px 835) or side 55 (Px 834), and apply a light. One tilt of the spirit can provides just a sufficient quantity of spirit to enable the lamp to be lighted up. Can must be kept inclined until no more spirit pours out.
7. Clean in the preheating time nipple 50 with needle 68.
8. When the spirit in the heating cup has almost burnt out, open valve 7 slowly by turning about once to the left. It is very essential for the perfect working of the lamp that the preheating has been done thoroughly. The liquid fuel flows through the feed pipe and valve to the vaporizer, where it is evaporated by heat. The mantle burns off with the spirit flame and automatically shapes itself. Should it happen that the spirit flame extinguishes before the valve is opened, the lamp can be lit at the mantle with a match.
9. Air Regulation  
The regulating screw 32 is designed to regulate the quantity of air which is taken in. When lighting the lamp for the first time the slot in the screw-head must be in vertical position. The screw has then slowly to be turned to the left by means of a screw-driver until the mantle reaches its full lighting power.
10. To extinguish the lamp turn handle of valve 7 to the right till you feel resistance.

**Practical Hints for maintenance und service of Lamps**

1. To clean or renew the vaporizer-stuffing.  
Remove screw-plug 52 and draw the stuffing 53 slowly out by means of the supplied key for vaporizer-stuffing 69 by giving a slow turn to the right. In order to clean the stuffing, it is good to allow it to remain in paraffin for some time. We recommend to renew the stuffing after about 4 weeks burning.
2. To clean or renew the nipple-stuffing.  
Unscrew nipple 50 with spanner and draw out the stuffing 51.  
Clean as mentioned under § 1.
3. Leakages may arise:
  - a) At the filling-screw through a defect in the washer; renew the same.
  - b) In the air pump by getting dirt into valve 10 under slackening of valve-spring 18. A leaky pump valve will push the pump piston out of the barrel. The faulty parts should be replaced.
  - c) At the cut off valve 7. Tighten sleeve-nut 27. If this does not seal the leakage, loosen sleeve-nut 27, screw out valve-spindle 31 and replace asbestos-packing 29.
4. To clean the heating-cup:  
After lowering the reflector and removing the mantle, the heating-cup can be lifted by giving a slight turn to the left.
5. To remove soot from the mantle:  
The mantle gets sooty when the valve is opened before nearly all the spirit in the heating-cup is burnt out. In this case the vaporizer is not hot enough, to vaporize the paraffin. The paraffin burns in the mantle with yellow-sooty flame. Close at once valve 7 and repeat the preheating after a little while. Clean nipple with needle. The sooty mantle will become white again while burning after lowering of the reflector.
  - a) by carefully blowing on it with the mouth,
  - b) by blowing air into the mixing tube by means of a thin brass pipe.  
In case the air-pump does not work, a cycle-pump can be fixed to valve 13 of the filling screw and be used.



**Petromax**

**Gebrauchsanweisung für Petromax-Lampen**

No. 834/250 HK

No. 835/500 HK

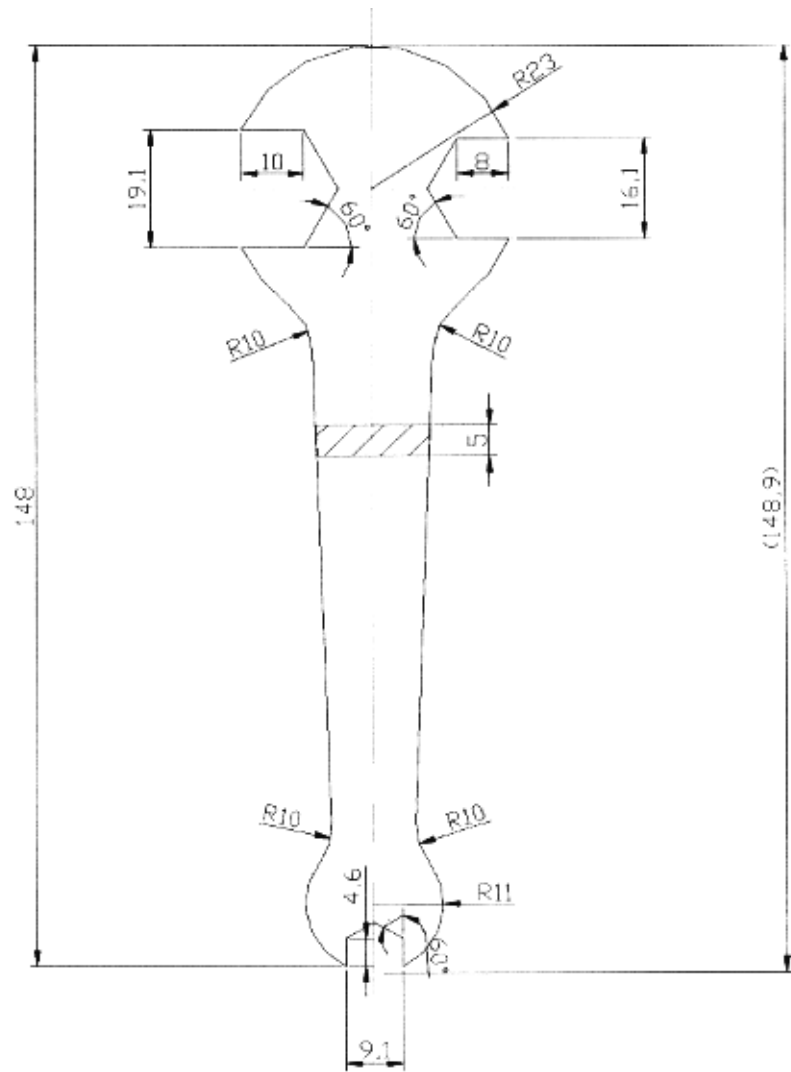
Die Lampen sind für Petroleum als Brennstoff vorgesehen.

**Inbetriebsetzen:**

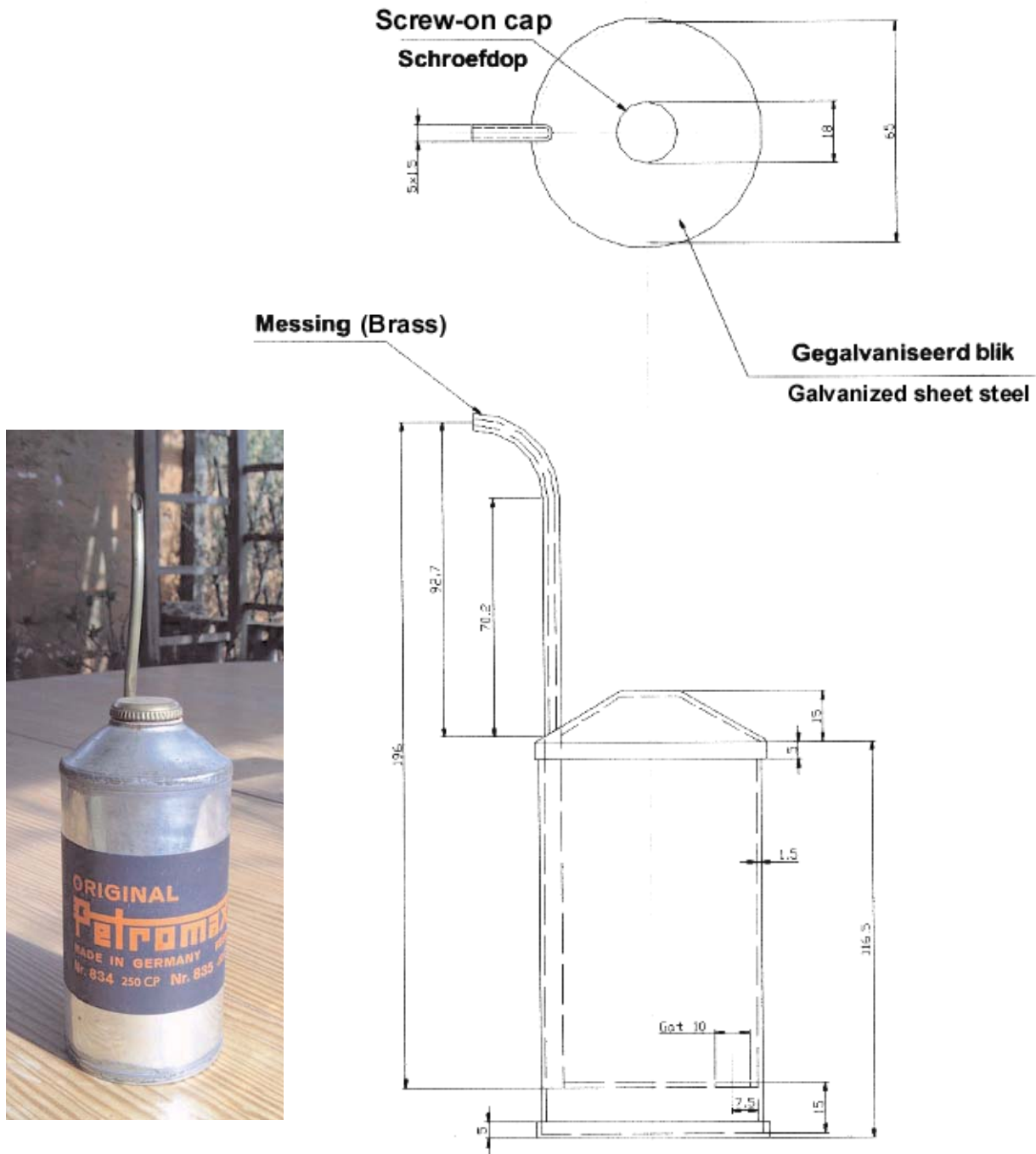
1. Füllkappe 5 abschrauben, Fülltrichter 65 fest einsetzen, Petroleum einfüllen (Füllung ist beendet, wenn Petroleum im Trichter stehen bleibt). Füllkappe wieder fest aufschrauben.
2. Stets beachten, daß das Ventil 7 geschlossen (nach rechts gedreht) ist.
3. „Original-Petromax“-Glühkörper am Mundstück 3 anbinden, in Gaskammer 34 einschrauben. Zündkörper 38 auf Zündrohr 36 so aufschrauben, daß die seitliche Bohrung zum Glühkörper zeigt.
4. Glasglocke 74 in Reflektor einsetzen.
5. Luft in den Behälter pumpen (Pumpe 6) bis Zeiger des Manometers auf rotem Strich steht.
6. Tür am Mantel öffnen, Schieber (Px 834) bzw. Klappe (Px 835) öffnen. Mit Füllkanne 67 Spiritus durch die freigewordene Einfüllöffnung in die Anheizschale gießen und anzünden. (Die Kanne gibt bei einmaliger Neigung die zum Anheizen erforderliche Menge Spiritus her, sie muß solange geneigt gehalten werden, bis kein Spiritus mehr herausfließt).
7. Düse 50 während des Vorwärmens mit Nadel 68 reinigen.
8. Ist der Spiritus beinahe ausgebrannt, Ventil 7 langsam öffnen (etwa eine Umdrehung nach links).  
Der Glühkörper wird beim erstmaligen Gebrauch durch die Spiritusflamme abgebrannt. Falls Spiritusflamme verlöscht, bevor das Ventil geöffnet ist, kann die Lampe nach Abklappen des Reflektors am Glühkörper angezündet werden.
9. Luftregulierung.  
Schraube 32 mit Schraubenzieher langsam nach links drehen, bis der Glühkörper volle Leuchtkraft gibt, (höchstens eine viertel Umdrehung). Beim erstmaligen Inbetriebsetzen muß der Schraubenschlitz senkrecht stehen.
10. Löschen: Ventil 7 bis zum Anschlag nach rechts drehen.

**Praktische Winke zur Instandhaltung der Lampe:**

1. Reinigen bzw. Erneuern der Vergaserstopfung.  
Verschlußschraube 52 entfernen, mit Schlüssel 69 die Stopfung 53 durch langsames Drehen nach rechts herausziehen. Stopfung längere Zeit in Petroleum legen und säubern. Es wird empfohlen, die Stopfung nach etwa 4-wöchentlicher Brenndauer zu erneuern.
2. Reinigen bzw. Erneuern der Düsenstopfung.  
Mit Schraubenschlüssel 66 Düse 50 abschrauben und Stopfung 51 herausziehen. (Reinigung wie unter 1).
3. Undichtigkeiten können entstehen:
  - a) Bei der Füllkappe; Dichtungsscheibe 11 erneuern.
  - b) In der Luftpumpe 6 durch Verschmutzen des Ventils 10 unter nachlassender Spannung der Ventilsfeder 18. (Undichtiges Pumpenventil macht sich beim Pumpen durch selbsttätiges Herausdrücken der Kolbenstange bemerkbar.)
  - c) Am Absperrventil 7: Überwurfmutter 27 nachziehen. Wenn keine Dichtung erzielt wird, Überwurfmutter 27 lösen, Ventilspindel heraus-schrauben und Graphit-Packung 29 ersetzen.
4. Reinigen der Anheizschale:  
Nach Abklappen des Reflektors und Entfernung des Glühkörpers, Anheizschale nach links drehen und herausnehmen.
5. Verrußen des Glühkörpers:  
Dieser verrußt, wenn das Ventil vor dem Ausbrennen des Spiritus vorzeitig geöffnet wird. Der Vergaser ist nicht genügend erhitzt, um das Petroleum zu verdampfen. Das Petroleum brennt im Glühkörper mit gelbbräunlicher Flamme. Das Ventil 7 ist sofort zu schließen und nach einiger Zeit der Vorwärmvorgang zu wiederholen. (Düse häufiger mit der Nadel reinigen). Der verrußte Glühkörper wird, während er brennt, wieder weiß:
  - 1) Durch vorsichtiges Anblasen mit dem Munde (nach Öffnen des Reflektors),
  - 2) Durch Anblasen mit einem in das Mischrohr 33 gesteckten schwachen Rohr. Sollte die festeingebaute Pumpe versagen, so kann eine Fahrradpumpe an das Ventil 13 der Füllkappe 5 angeschlossen werden.



**Px 834 Universal spanner (wrench) 28/04/04,  
© Wim van der Velden  
All measurements in mm**



Px 834 Alcohol filler can, 28/04/04,  
© Wim van der Velden  
all measurements in mm

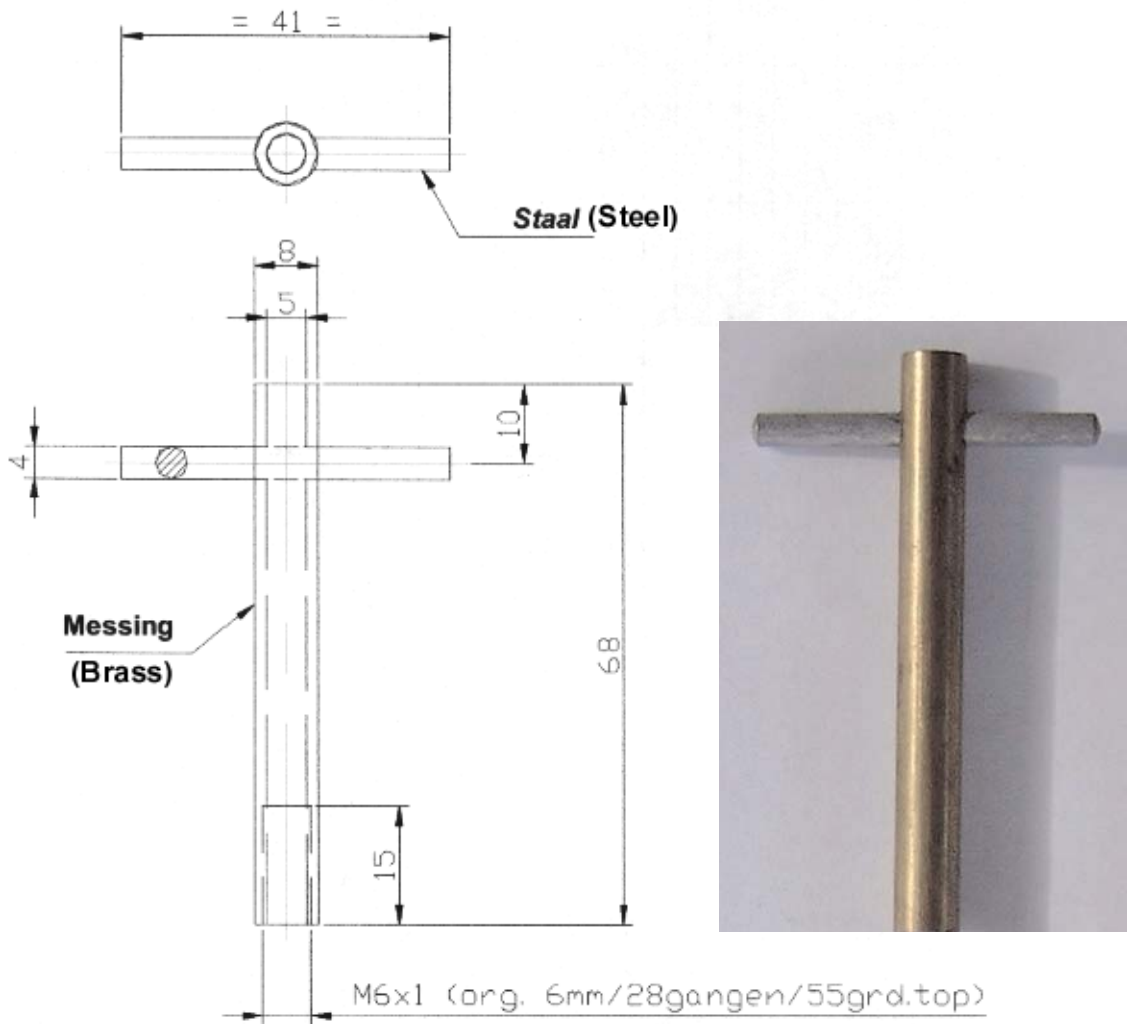
Label for Alcohol can, printed 100%...actual size 230 x 60 mm

Note: Color reproduction here is likely to be incorrect! Actual color is a dark navy blue that approaches black and a bright deep orange.

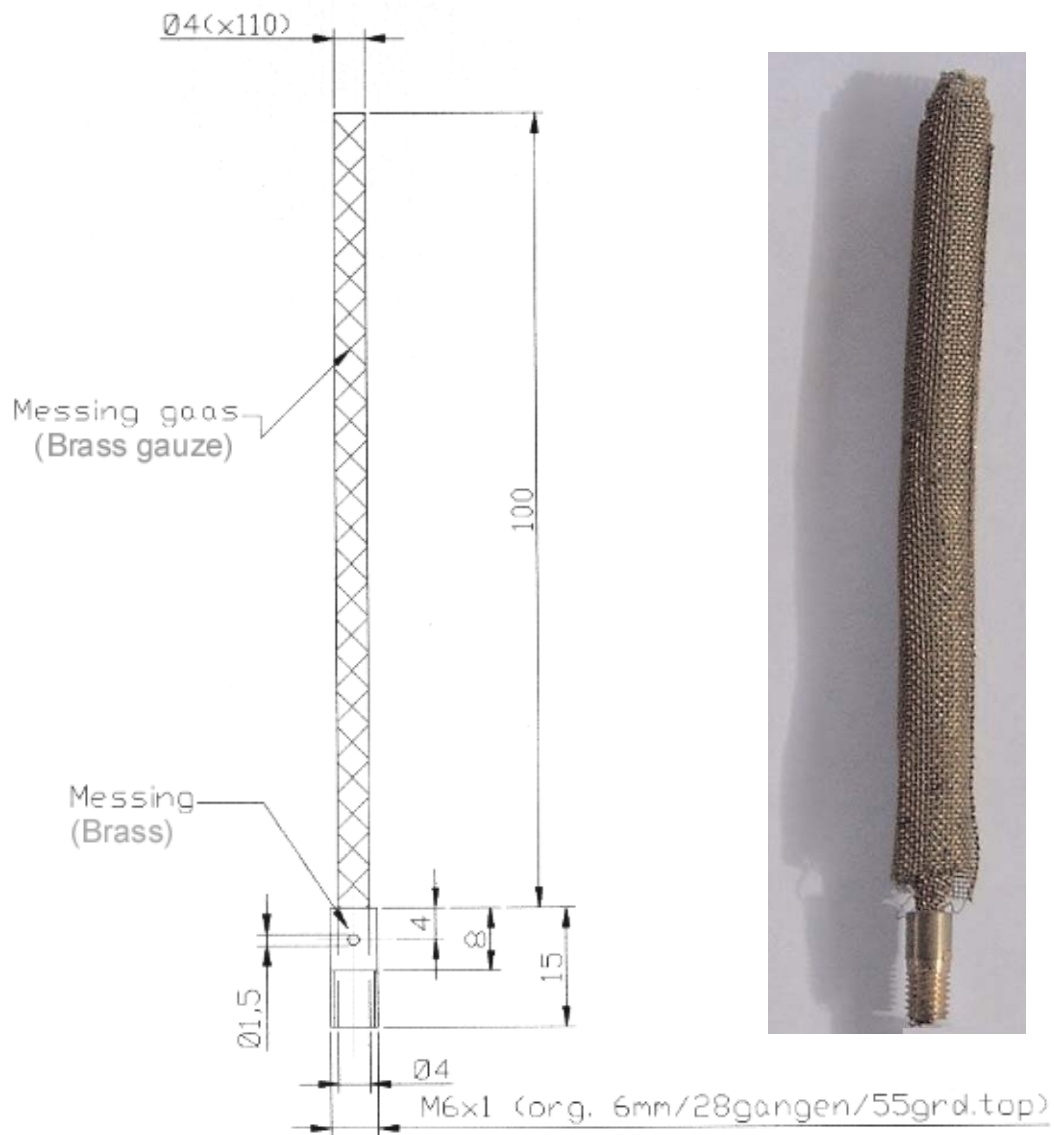
From a color chart, the RGB numbers for the deep blue are R=46, G=46 and B=108.

For CYMK, C+100%, Y=85%, M=21% and K=13%

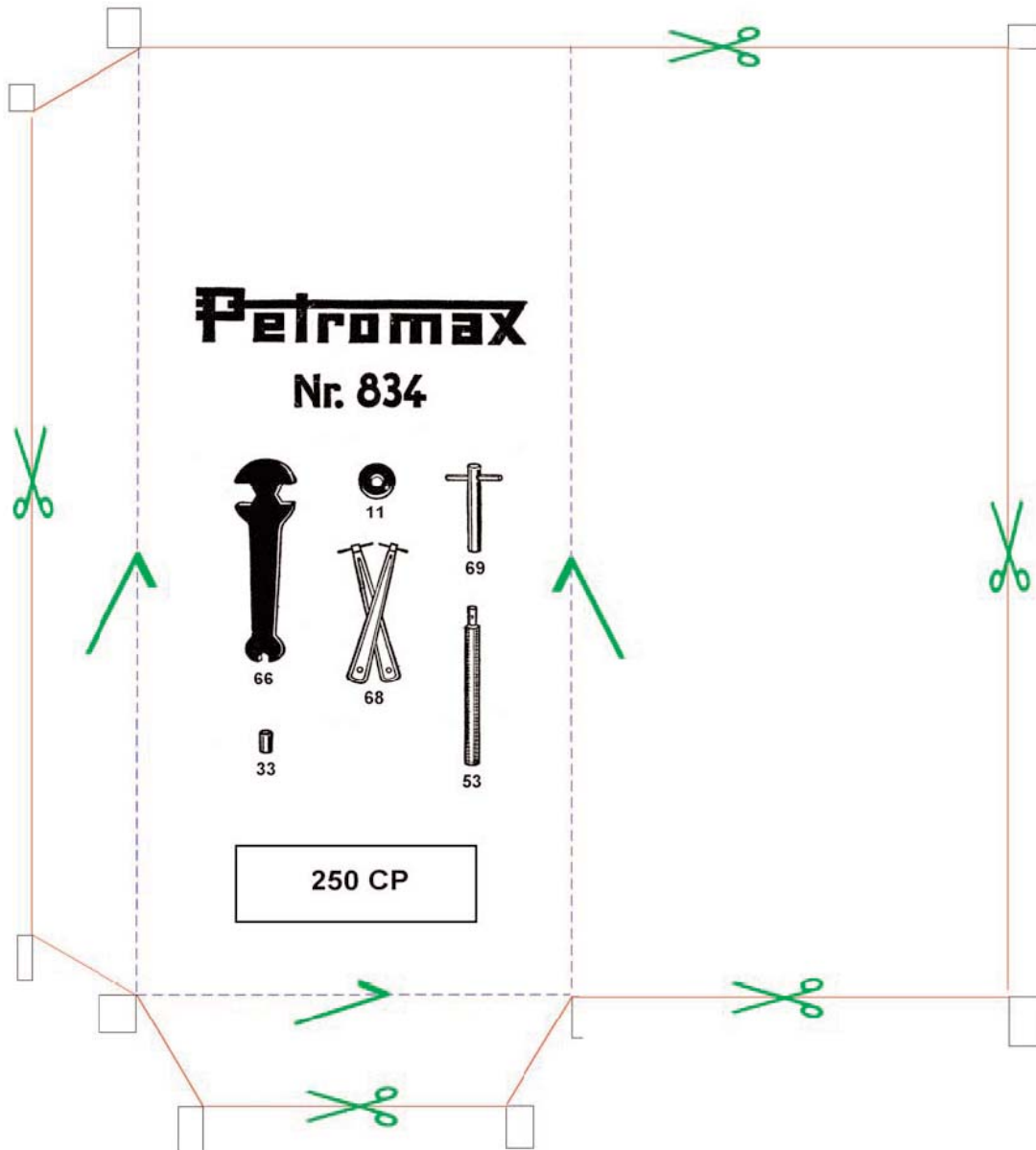
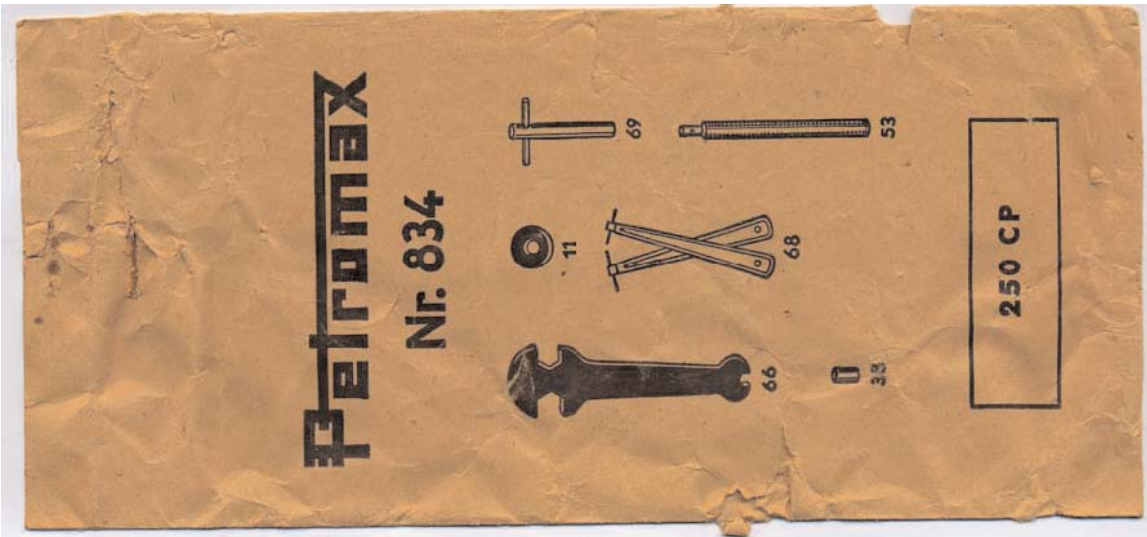




**Px 834 Filter tool / wrench 28/04/04,**  
**© Wim van der Velden**  
**all measurements in mm**



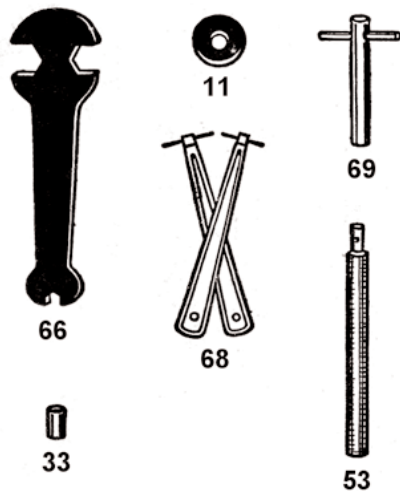
**Px 834 Filter, 02/09/04,  
© Wim van der Velden  
all measurements in mm**



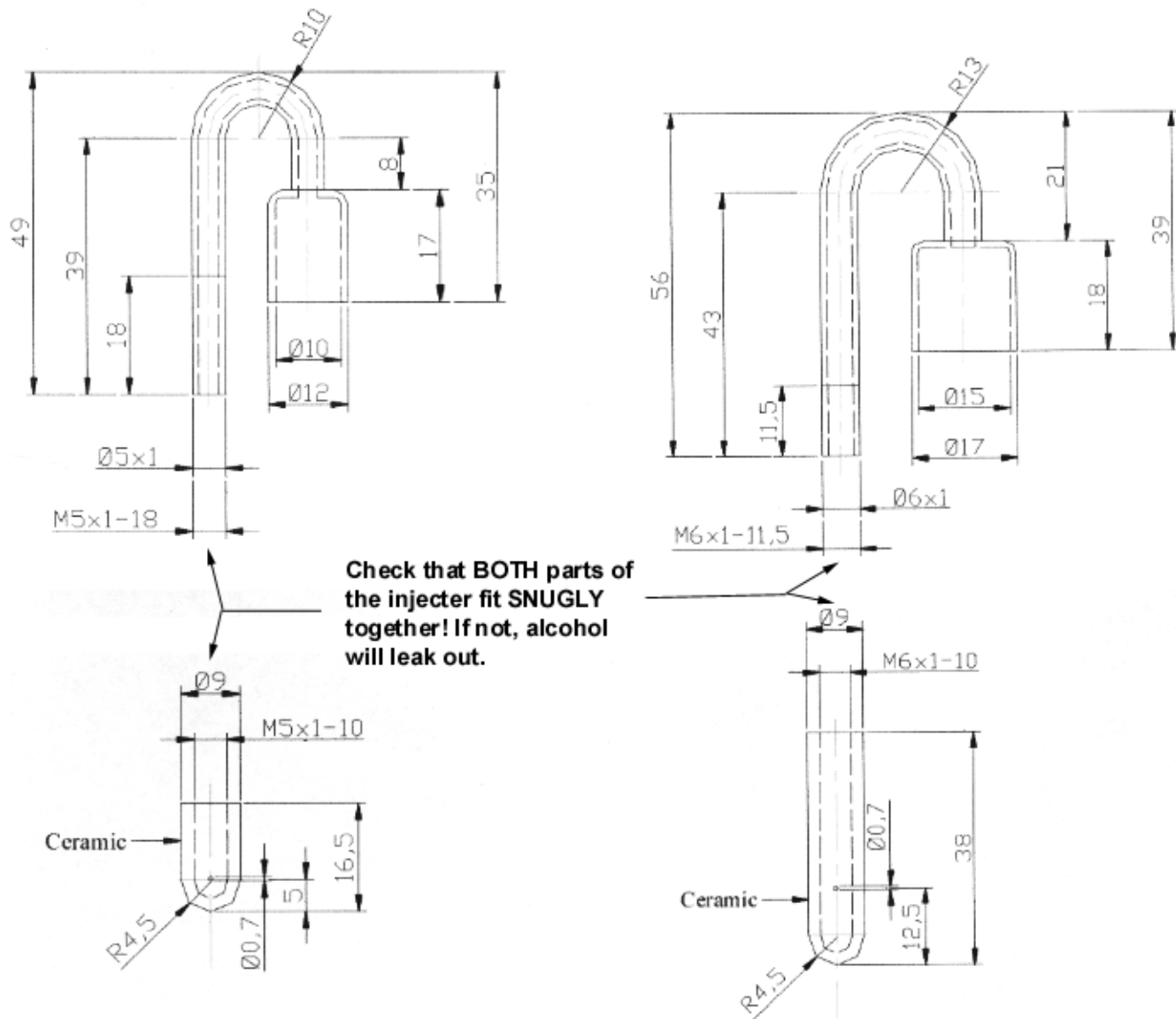
Jacket (envelope) printed 100 %...folded size = 60 x 180 mm

# Petromax

Nr. 834



250 CP



Note: Ceramic cap MUST fit snugly on brass tube body of upper part of igniter!

Px 834 Ignitor with tip, 30/09/04, Px 835 Ignitor with tip, 30/09/04,  
© Wim van der Velden  
All measurements in mm  
Material: messing ( brass )  
Metric thread is NOT original