

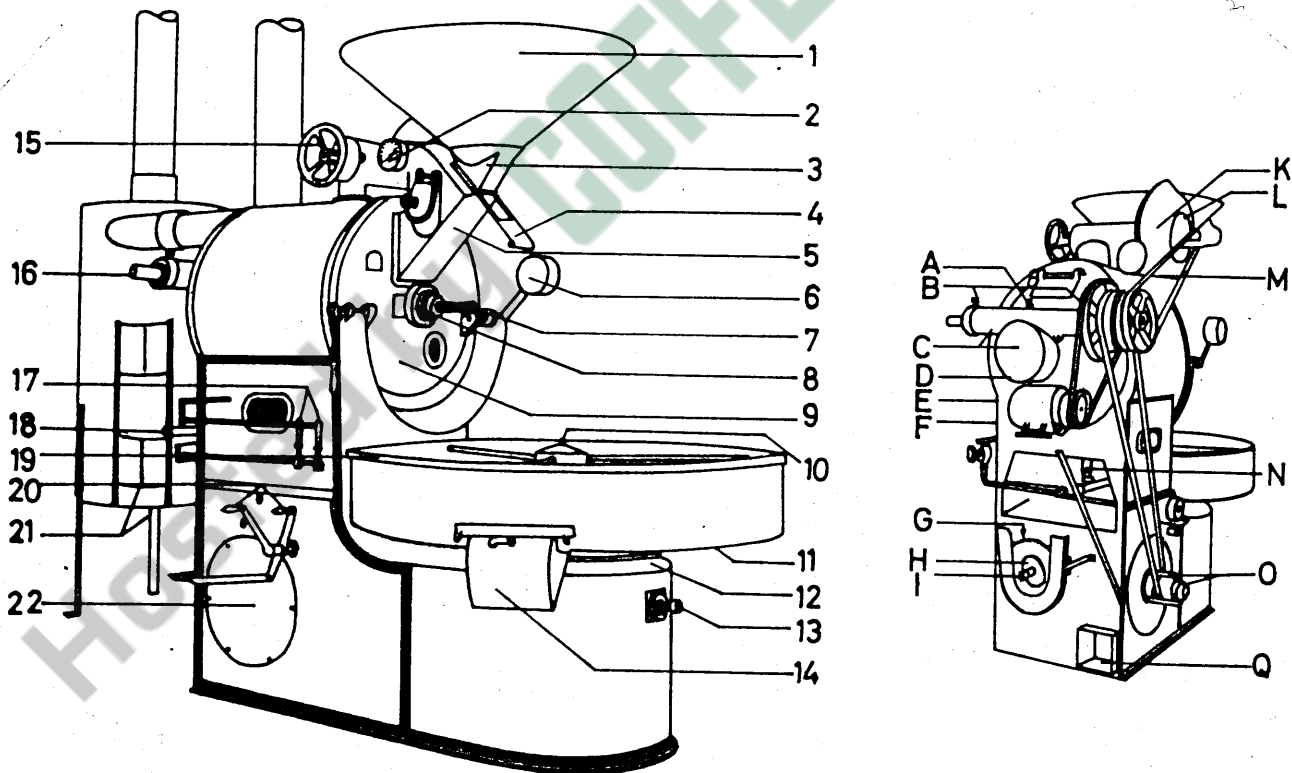
ASSEMBLY AND OPERATING INSTRUCTIONS FOR GAS-HEATED
 P R O B A T R O A S T E R S T Y P E U N I V E R S A L UG/P 15-22
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A. A S S E M B L Y
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The place where the roaster is to be located should be determined well in advance, and the following points should be carefully observed:

The roaster should be placed on a level floor of stone, concrete or wood; wooden floors must be covered with asbestos slabs or metal plates as an insulating material.

There should be two separate exhausts, one for roasting gases and fumes and one for cooling air. These exhausts (chimneys or exhaust stacks) should be 180 x 180 mm wide, or have a diameter of 180 mm. No other burning equipment, such as ovens, water heaters etc. may be connected to these stacks or chimneys.



When the roaster arrives, it should be placed as near as possible to the place where it will be erected. Take care when transporting or unpacking the roaster, because the machine is top-heavy. When erecting the roaster itself, there should be enough room left for the chaff collector, which may not be placed against the wall, and must be well accessible. If the chaff collector is not placed behind the roaster (for instance at the side, or in a cellar) there should be a clearance of at least 40 cm between gear-box C of the roaster and the wall.

Depending on how the roaster is shipped, several parts will be taken off, and packed separately; these parts should be mounted first. As a rule, the following parts will not be mounted:

Feeding Funnel Item 5
 Hopper Socket Item 3, with Hopper Item 1 and Feeder gate Item 4.
 Valve Box Item 15, with drawband or pipe clamp;
 Roaster Fan with belt K.
 Counter-weight Item 6 for Discharge gate Item 9
 Chaff Collector (Cyclone) with piping to Roaster Fan, and
 Cooler with Stirring Mechanism.

After placing the cooler on its socket, it can be turned so, that cooler discharge gate 14 is in the required position. Then, the three screws Item 12 at the bottom of the cooler can be tightened and secured by means of counter-nuts.

The clean-out openings of the chaff collector can also be brought into their correct position after loosening the drawband. This being done, the piping between roaster fan and chaff collector can be mounted and fastened by means of the drawbands which are supplied with the roaster.

The following parts are also supplied as losse items!

1 set of burners	1 tin of grease
1 hooked spanner	1 screen cleaner
1 crank and journal end cover	1 thermometer
1 adaptor pipe for cooler fan	2 V-belts
1 sampler	1 set of spanners

These parts are to be mounted as follows:

Thermometer Item 2 should be mounted in the feeding funnel. Do not drive down the fastening-screw too tightly to avoid damage.

Do not mount burners Item N before cleaning. (Blow through).

Place cover Item 16 on the square journal shaft end.

Mount square adaptor piece Item Q for the cooler fan.

Place sampler into cylinder front at 7.

Then place belts of roaster and cooler fan, and of the motor.

Now, the piping from the cooler fan and from the chaff collector should be laid to the chimney, or into the open air. These stacks are not supplied by us. There are one or two points that should be carefully observed:

All exhaust stacks should have the same diameter all over, and there may not be any sharp bends. They should be as short and as straight as possible, should be inclined slightly upwards, and should enter the chimney, if any, at an angle of 45°. Do not push the stacks into the chimney too far, to avoid smoke baffling. The various pipe sections should be connected with drawbands, so that they can be taken apart very quickly and easily for cleaning purposes. If the use of longer pipe sections cannot be avoided, we strongly recommend to provide clean-out openings.

F. ROASTING OPERATION

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When the thermometer Item 2 indicates a temperature of about 200° C, the green coffee which has to be filled into the feeding hopper first, may be charged into the roaster cylinder by opening slide gate Item 4. We recommend to use coffee of inferior quality for the first few roasts. During roasting, the degree of the roast may be checked by taking samples or by looking through the sight-glass in the cylinder cover.

After the first distinctly audible "crackling" of the coffee beans in the cylinder, gas valve 2 at point 17, or diaphragm valve 2 at P₂ can be closed to throttle the heating. Somewhat later gas valve 2 can be closed as well. For certain types of coffee, or for certain blends, it may be advisable or preferred - for a kind of "compensation" of the roast - to set the valve box to "EXTERN" (external heating) for a period of about 1 minute, while the heating is being switched off gradually. This may also be done towards the end of the roasting cycle. This, however, is a matter of personal experience. Shortly before termination of the roasting cycle, when only the pilot flame is left burning, the valve box may be set to "AROMA". (maximum 30 to 40 secs.). Thus, no air will be drawn through the cylinder. The beans are virtually "braised", which will improve the aroma of the coffee.

Heating control:

Both gas valves opened	- 3/3 heat application
Only valve no. 1 opened	- 1/3 heat application
Only valve no. 2 opened	- 2/3 heat application

Settings of Valve Box Item 15:

"EXPRESSO"	- means "quick, fast"; hot air circulates through the roasting cylinder, while the cylinder is simultaneously heated outside.
"EXTERN"	- means "external heating only". No air circulates through the cylinder.
"AROMA"	- No exhaust from the cylinder, and no heating, neither inside nor outside. All flames <u>must</u> be switched off, except the pilot flame.

In the roaster fan there is a damper. This damper should be adjusted only once, that is when the roaster is erected and when the exhaust piping is connected. The same applies to damper Item M. Actually, this slider M operates damper M of the roaster fan. Once set, this setting should not be changed.

G. COOLING

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When the coffee has the required roasting degree, the cooler fan and the stirring mechanism may be started by means of lever Item 20. If not yet done, valve box 15 should be re-set to "EXPRESSO". Then, discharge gate Item 9 should be opened so that the coffee is discharged on the cooling screen, where the stirrers distribute the coffee over the whole surface of the perforated cooler bottom. When the coffee is thus distributed, the stirrers may be switched off until the coffee beans are cooled sufficiently. Then re-start the stirrers and open cooler gate 14 to discharge the coffee. Switch off the cooler fan.

D. LUBRICATION

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Before starting up a new roaster, all bearings should be checked, and lubricated, if necessary. All bearings should be lubricated regularly. Excessive lubrication is absolutely pointless ! Use a not too thin, acid-free oil, such as for instance Shell Macoma Oil 76 or similar, and for greasing a heat-resisting grease (Calypsol), which can be obtained from us.

On a new roaster, gear-box C should first be filled with oil through inlet screw A. Fill the gear-box up to halfway the oil level glass D. This should only be done when the roaster is not running. This should be repeated from time to time. (See under Maintenance).

The following points should be lubricated regularly:

with Grease: (screw grease cups down slightly)
front cylinder bearing at 8
horizontal drive shaft of stirring mechanism at 13 and I.
Gear shaft B
Cooler fan O
Roaster Fan L

with oil: (only a few drops)
vertical drive shaft of stirring mechanism at 10
Operating rods of gas burner assembly
Operating rods of stirrers to cooler fan
Valve box at 15
Clutch at G.

E. INITIAL START - UP OF ROASTER

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- a) Start roaster drives.
- b) Open discharge gate 9 and set valve box 15 to position "EXPRESSO SCHNELL".
- c) Ignition:
 - 1) city gas : open pilot valve at 17 and light pilot flame.
 - 2) bottled gas : open diaphragm valve P₁ and light pilot flame.
- d) Heating:
 - 1) city gas : open both gas valves 17 one after the other.
 - 2) bottled gas : open both diaphragm valves P₂ one after the other.
- e) Close discharge gate 9 and check whether all flames are burning. The flames should be bluish-green, with a bright blue-green glow on the burner plates.

When heating up the roaster for the first time each day, this should be done slowly and gradually. The roaster must never be heated when the cylinder is not rotating ! The pilot flame should be burning during the entire roasting cycle.

When starting up a new roaster, first heat up to a temperature of 80°C, and then cool down to about 25°C. Then allow the temperature to rise slowly to some 130°, and again cool down. Not until then, the roaster may be heated up to the required roasting temperature of 180 - 200°C, or higher.

B. CONNECTION TO GAS SUPPLY

1. CITY GAS

The diameter of the gas supply pipe depends on its length. Not until point 18 is reached, its diameter should be reduced to 1". The burner jets of the gas burning assembly have been drilled to suit an average dynamic pressure of 50 mm. In case gas is only available at a lower pressure, the jets should be drilled wider by about one- or two-tenths of a mm.

Maximum gas consumption:

for Roasters Type UG 15: approx. 8,4 cbm/h. = approx. 140 ltr./min.
 for Roasters Type UG 22: approx. 12 cbm/h. = approx. 200 ltr./min.

the above consumption rates being based on a calorific value of approx. 4000 Kcal/cbm. The actual average gas consumption is considerably less.

2. BOTTLED GAS

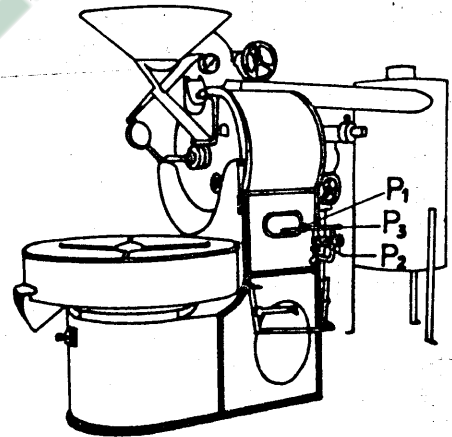
In case bottled gas is used, special safety codes and regulations are to be observed, about which your local gas supplier can give you all details.

The gas match-point P_3 has a diameter of 1/2". If the gas supply pipe has a larger diameter, this diameter should be reduced just before point P_3 . The jets of the gas burner set 3 have been drilled to suit an average static pressure of 500 mm water gauge.

Maximum gas consumption:

UP 15: approx. 1,6 cbm/h. =
 3,24 kg/h. =
 25 ltr/min.
 UP 22: approx. 2,4 cbm/h. =
 4,8 kg/h. =
 40 ltr/min.

based on a calorific value of approx. 10.000 Kcal/kg. However, the actual gas consumption rates are considerably lower.



C. CONNECTION TO CURRENT SUPPLY

These connections are to be made by a qualified electrician.

Motors required for UG/P 15 and UG/P 22: 1½ HP (1,1 kW) -1500 r.p.m.
 Three-phase A.C. motors are preferred.

Speed of the cross shaft of the gear-box: 600 r.p.m.
 Rotating speed of the roaster cylinder: 51 r.p.m.

Check the direction in which the cylinder rotates: this should be counter-clockwise, if seen from the front (cooler side).

If the motor is not supplied by us, it should first be mounted on the bracket F, and the belt pulley should be mounted.
 The roaster must be grounded.



EMMERICH

When the coffee is discharged on the cooler and the cylinder is completely empty, and when the cylinder discharge gate is closed again, the cylinder may be heated up again for the next roast, while the roasted beans of the preceding batch are still on the cooling screen.

H. GENERAL REMARKS

The chaff which is liberated during roasting is exhausted and collected in the chaff collector, which is of the cyclone collector type. This collector should be emptied frequently, through clean-out gate Item 21. This frequency depends on the quantities and types of coffee roasted, but as a rule twice a day is the minimum.

Should a grinding noise be heard at the front of the rotating cylinder, the clearance between cylinder and cover is too small. This distance should be about $\frac{1}{2}$ to $\frac{3}{4}$ mm. This can be checked by means of a thickness gauge, or by inserting a knife-blade through the open discharge gate 9. If the distance is less than $\frac{1}{2}$ mm., the lid of bearing 8 should be taken off, and the bearing should be turned clockwise by means of the hooked spanner, until the distance is wide enough. If beans or bean particles fall through the opening, the distance is too wide, and the bearing should be turned into the opposite direction. The bearing cover should be replaced. If, after this adjustment, the grease cup points downwards, it may be brought into correct position after removing it and putting it on again pointing upwards.

Sprocket wheel H has a sliding coupling. If the resistance becomes too great, the stirrers will stop to avoid injuries of operating personnel. However, if the stirrers fail to rotate under normal conditions, this coupling should be checked, and if required, the three screws should be tightened so far, that the stirrers just rotate. If the chain is not tense enough, this may be corrected by adjusting idler E.

In case of current break-down, the gas supply as well as the current supply should be switched off immediately. Then journal cover 16 must be taken off, and the crank placed on the axle end, so that the cylinder can be discharged.

I. MAINTENANCE AND CLEANING

Frequent and thorough cleaning is imperative may not be neglected !!

a) DAILY

The chaff collector at least twice a day, if required oftener.
The front roaster housing, underneath the cylinder, through gate 19.

b) AT LEAST ONCE A MONTH

Piping from roaster fan to chaff collector cyclone.
Piping from chaff cyclone to chimney, or to outside.
Room underneath the cooler screen through opening 11.
All gas burners (take out, and blow through).

c) EVERY SIX MONTHS

Cooler fan, after taking off cover Item 22.
Roaster fan K and valve box 15, after taking off the roaster fan.
Piping from cooler fan to chimney or outside. Gear-box C (lubricate!)

d) ONCE A YEAR

take off and clean all bearings (only by an expert !)

Keep all nickel-plated and polished parts dry, and covered with a thin oil or vaseline film. Contact us in case of any problems.