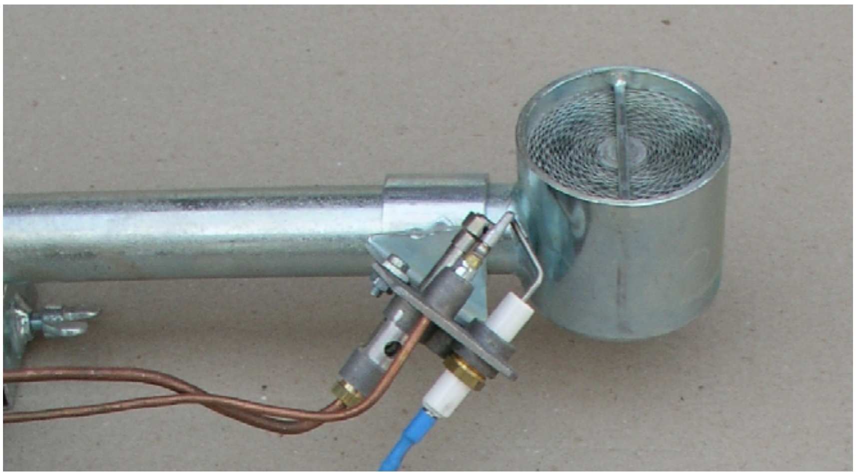
Instruction Manual



Servo Jet Burner

Helmut Rohde GmbH – Ried 9 – 83134 Prutting
Fax 08036 / 674976 19 info@rohde-online.net

1. The burner unit

The burner is designed as an atmospheric burner. It operates in the low-pressure range for natural gas from 0 to 50 mbar. The primary air is partly supported by compressed air and is fed into the mixing rod through a separate supply system.

The pressure range lies between 0 and 1.5 bar for the supply of compressed air and the pressure at the primary air supply holes, which are always open, is 0 bar.

The burner is fully functional with or without compressed air. The compressed air support has a positive effect on the flame composition. Therefore a failure of the compressed air supply will not result in malfunction, however the quality of the flame will change.

Safety of burners

The thermo switches in the main gas line are connected with the pilot burner unit via a separate gas distribution and thermo sensor line. One of them is mounted onto each burner head of the atmospheric burner. This ignition unit ensures that there is always an ingnition flame at the burner head of the atmospheric burner. Thus the airgas mixture is re-ignited after adequat adjustment of the settings in case of faulty operation or if the main flame gets extinguished.

Technical data:

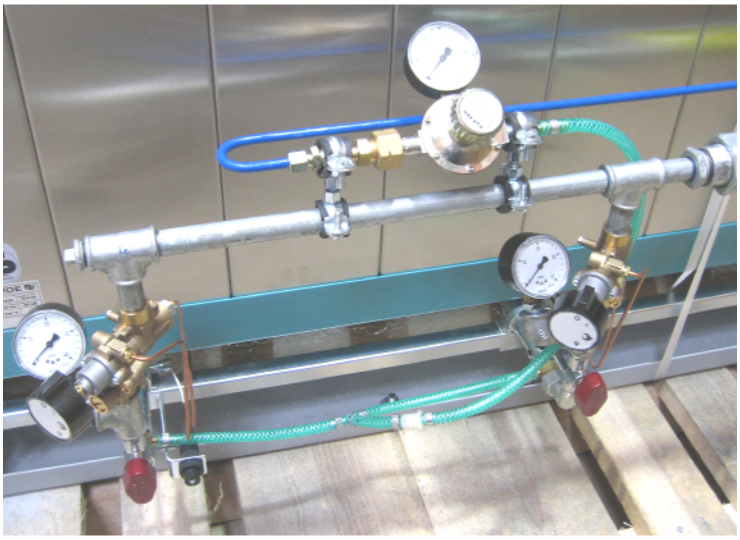
Output burner: 20 kW
Pressure natural gas: 0-50mbar
1“ inch connection valve

Pressure air: max. 2.5 bar

Compressor air flow: each burner 50 Liter/min.
2 burner = compressor with 250 Liter/min delivery volume
4 burner = compressor with 400 Liter/min delivery volume.

Helmut Rohde GmbH – Ried 9 – 83134 Prutting
Fax 08036 / 674976 19   info@rohde-online.net

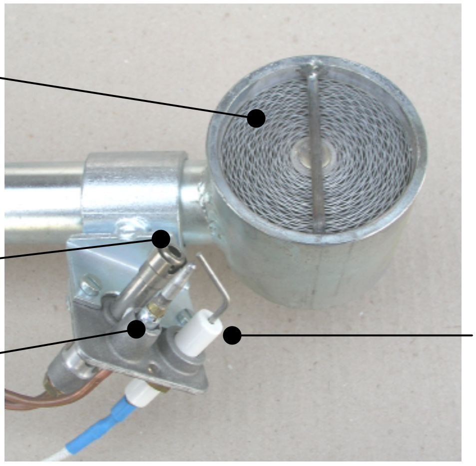
2. Overview burner unit



Complete unit

Servo Jet burner head

Burner head



Pilot flame

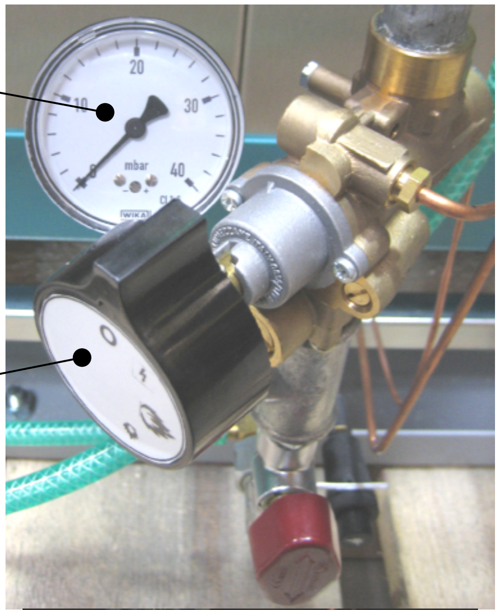
Safety thermocouple for
safety valve

Ignition for pilot flame

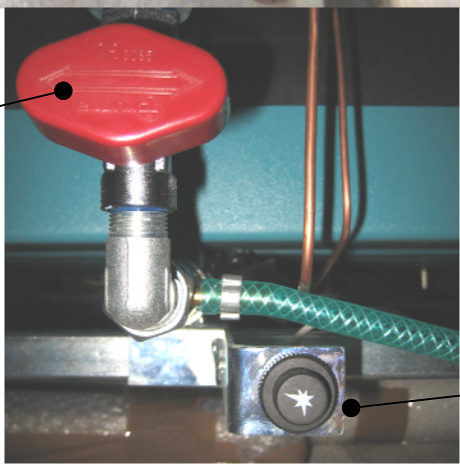
Burner ignition unit:

Natural gas pressure manometer (Millibar)

Valve handle



Stop valve for main flame



Piezo ignition for pilot flame

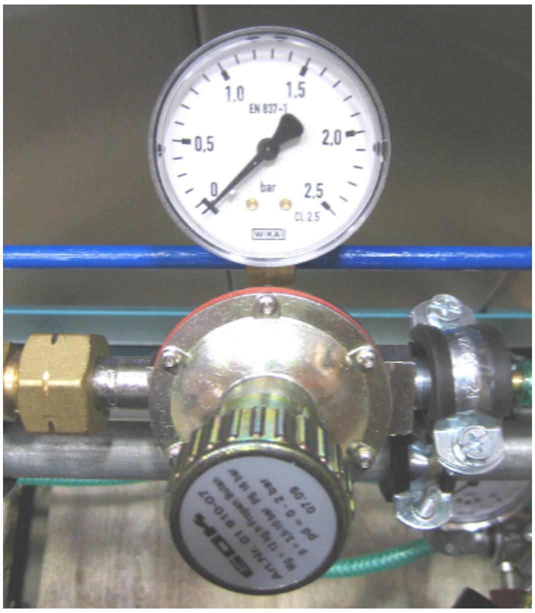
The Servo Jet Burner – Description of operation

The atmospheric burner distinguishes itself from the conventional propane gas burners or other low-pressure burners basically by its customised nozzle, which makes it possible to inject compressed air into the mixing rod of the atmospheric burner. The low amount of compressed air, which is under high pressure, results in flow conditions in the mixing rod similar to those in a medium-pressure gas burner. It sucks in additional primary air through the primary air supply holes.

Due to the lower pressure in this area the incoming gas is now sucked into the mixing rod parallel to the compressed air jet and is mixed with the air by the strong turbulences of the compressed air jet in the mixing rod. This mixing process works so well that the gas is burned completely in small, short flames at the burner head above the burner plate. The usual appearance of long soft flames with a high carbon content does not occur.

The nozzle sections and air inlet sections of the burner and also the burner plate are designed in a way as to compensate for fluctuations of gas and air pressure within a wide range. Of cause this will change the appearance of the flame. The flame can only become extinguished under extreme circumstances, after the correct air-gas mixture has been readjusted the pilot burner will ignite the flame again.

3. The air line



The compressed air is supplied by a conventional air compressor and a pressure-proof air hose. The air flow is controlled with a pressure reducer, which allows for manual adjustment of the pressure in a range from 0 to 2.5 bar. The primary pressure of the conventional compressor should not exceed 2.5 bar. Behind the air pressure reducer a hose connection leads to the customised nozzles and supplies them with equal pressure.

Central connection for compressed air supply (blue)

NOTE: For optimal mixtures of air and natural gas please check the diagrams enclosed.

4. The gas line

The inlet pressure at the gas supply line should be at least 25 mbar and should be provided by the provider including a stop valve. Within the gas supply line one handle for each burner is installed, each of which belongs to one burner, in order to regulate the gas pressure in front of the burners within a range of 0 to 40 mbar. After that the line leads to the customised nozzle. Here the gas enters the mixing rod through an approx. 3mm nozzle.

This nozzle block contains a second, entirely independent air channel to which the compressed air system is connected. This channel ends in a 1mm nozzle which is parallel to the gas entry nozzle. The burner does not contain a mixing chamber or interconnection with the gas sytem.

Central 1“ inch connection for natural gas supply (yellow)

NOTE: For optimal mixtures of air and natural gas please check the diagrams enclosed.

5. GENERAL SAFETY

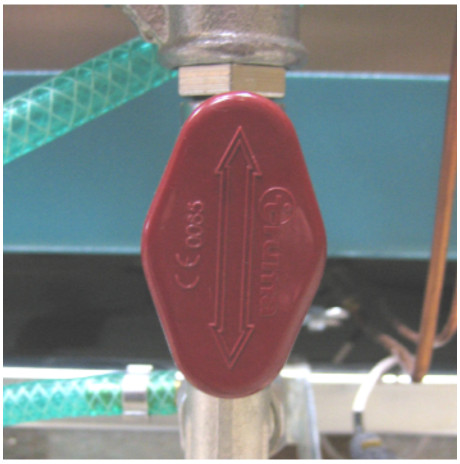
- Do not place inflammable materials or objects in the proximity of the burner.
- Children should never be left unguarded near the burner.
- Repair and maintenance of the burner must be carried out by a specialist, which is authorised by the manufacturer. Maintenance of the gas supply must be carried out by a qualified gas specialist.

6. INITIAL OPERATION / INSTRUCTIONS FOR USE

Ignition of burner No. 1 (right side)

CAUTION DANGER OF LIFE: Door or lid of the kiln must be fully opened when igniting the burner unit!

Step1:



Open the stop valve in direction of gas flow.

(The picture shows the open valve!)

Step 2:

 Burner unit OFF!

 Ignition of pilot flame

 Flame control high

 Flame control low

Step 3:

Press down the handle in position ○ and turn it to symbol „Scar“

Step 4:

Keep pressed down the handle!

Ignite a couple of times (piezo ignition) until the support flame is burning.

Carefully let go of the handle after approx. 10-20 seconds, the support flame has to keep burning (the thermo sensor becomes warm gradually and keeps the gas inlet open). If this is not the case, repeat steps 3 to 4.

Step 5:

Turn the handle to position “flame control high”.

Now repeat the process with burner 2 and burner 3 and 4 if applicable.

The handle enables you to individually switch the burners on an off. To re-ignite the burner follow the instructions above.

The compressed air supply should already be regulated when operating the first burner. You should start with the lowest pressure and carry out the exact adjustment after you have ignited the remaining burners.

7. END OF FIRING AND SHUT OFF BURNER UNIT

Step 1:

Lock the stop valve transverse of direction of gas flow.

Step 2:

O Burner unit OFF!

Halfway press down the handle in position ○, this separates the whole unit from gas flow.

8. ADJUSTMENT OF BURNER

Fine-adjustment of burner

Please find enclosed helpful gas and air diagrams. You can fine-tune the burner unit in accordance with the values in these diagrams.

9. TROUBLESHOOTING

The burner unit cannot be switched on.

- Check the main stop valve of central natural gas supply.
- Check if the stop valve of burners is open (in direction of gas flow = open).

10. GUARANTEE

We guarantee the faultless workmanship of the delivered burners and grant a 36-months guarantee from date of invoice.

The following instances are excluded from guarantee:

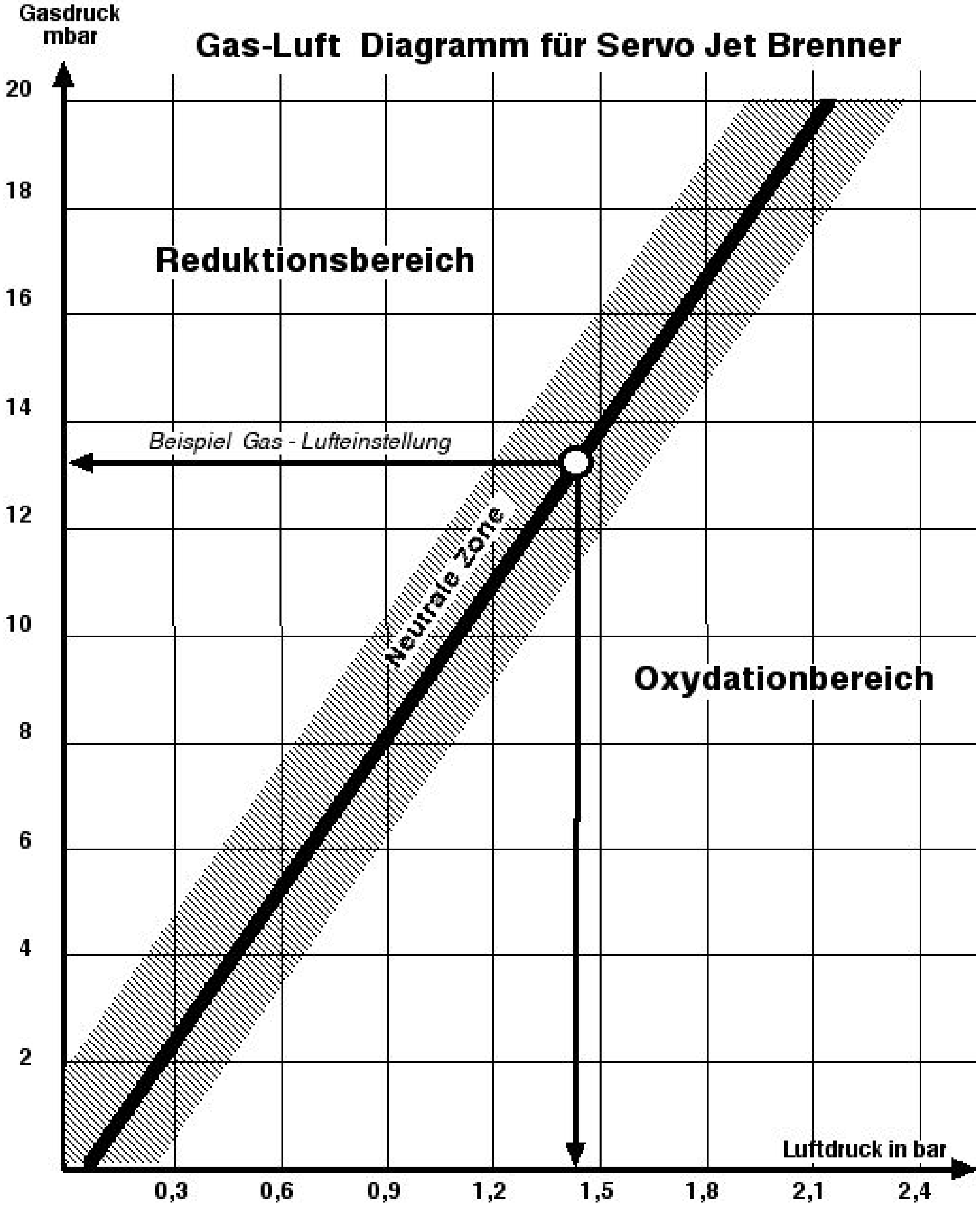
- Damages, which have been caused by the customer.
- Damages, which have been caused by fired material, e.g. due to exceeded temperature limits.
- The hose material of the 2-bottle connection and the hose connection experience a natural ageing process or wearout, especially when it is used outside. It has to be checked and if necessary replaced by a gas techinician in regular intervals.
- Damage caused by inappropriate transport(s).
- Damages due to chemical reactions during firing for which the kiln is not designed (e.g. salt glazed ceramics).
- The manufacturer is not liable for any damage caused by inappropriate operation and resulting damages.

What to do in the event of guarantee/damage:
Please notify your retailer - before any costs arise. Your retailer will then talk to us, the manufacturer, how to proceed.

All ROHDE products are checked for functionality before it leaves our factory!

We would like to wish you success and excellent firing results!
Your team ROHDE

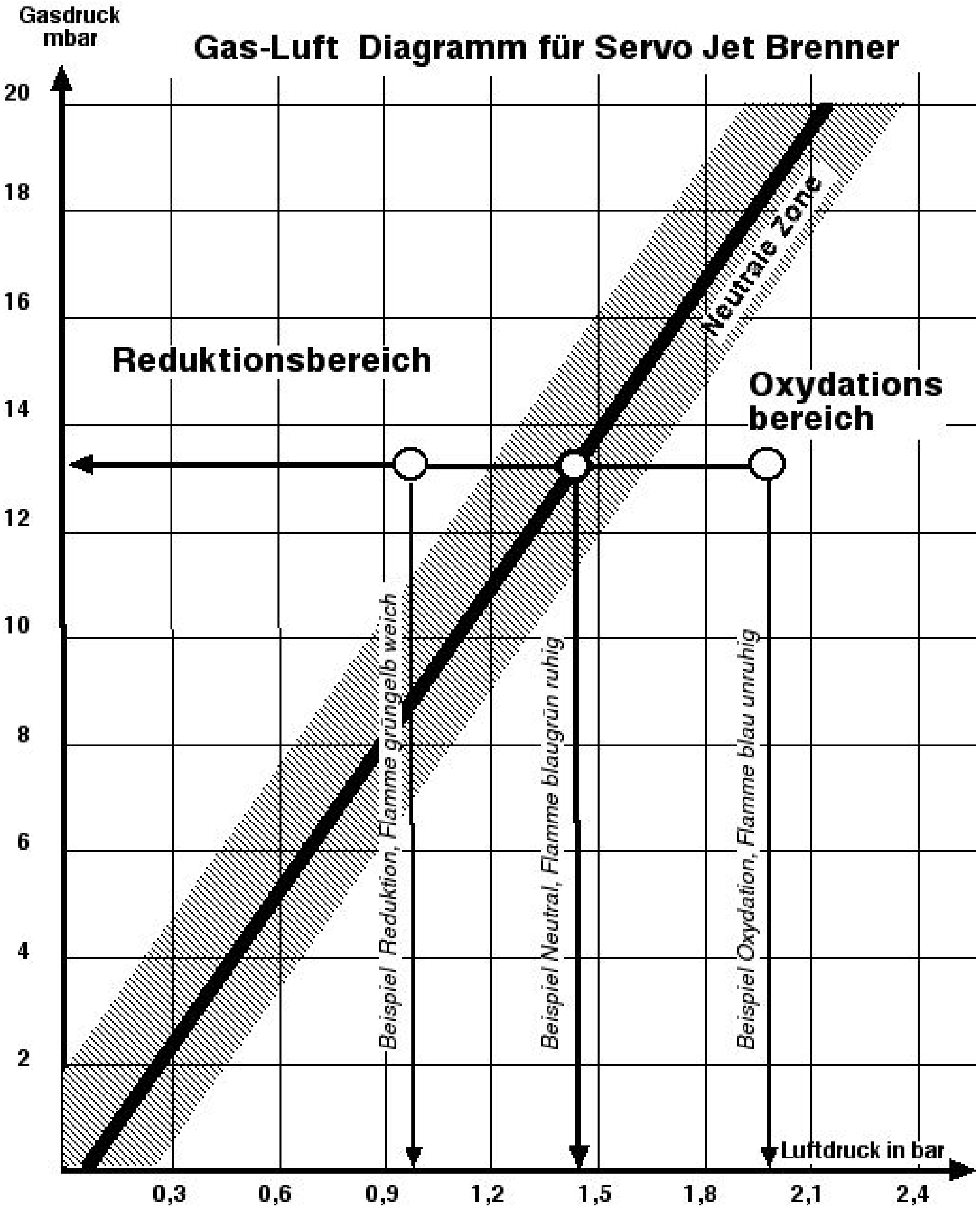
Appendix 1



1 bar = 1.000 mbar
= 10.000 mmWs
= 100.000 Pascal
= 14,5 Pfund/Quadratzoll

Beispiel bei konstanten Gasdruck

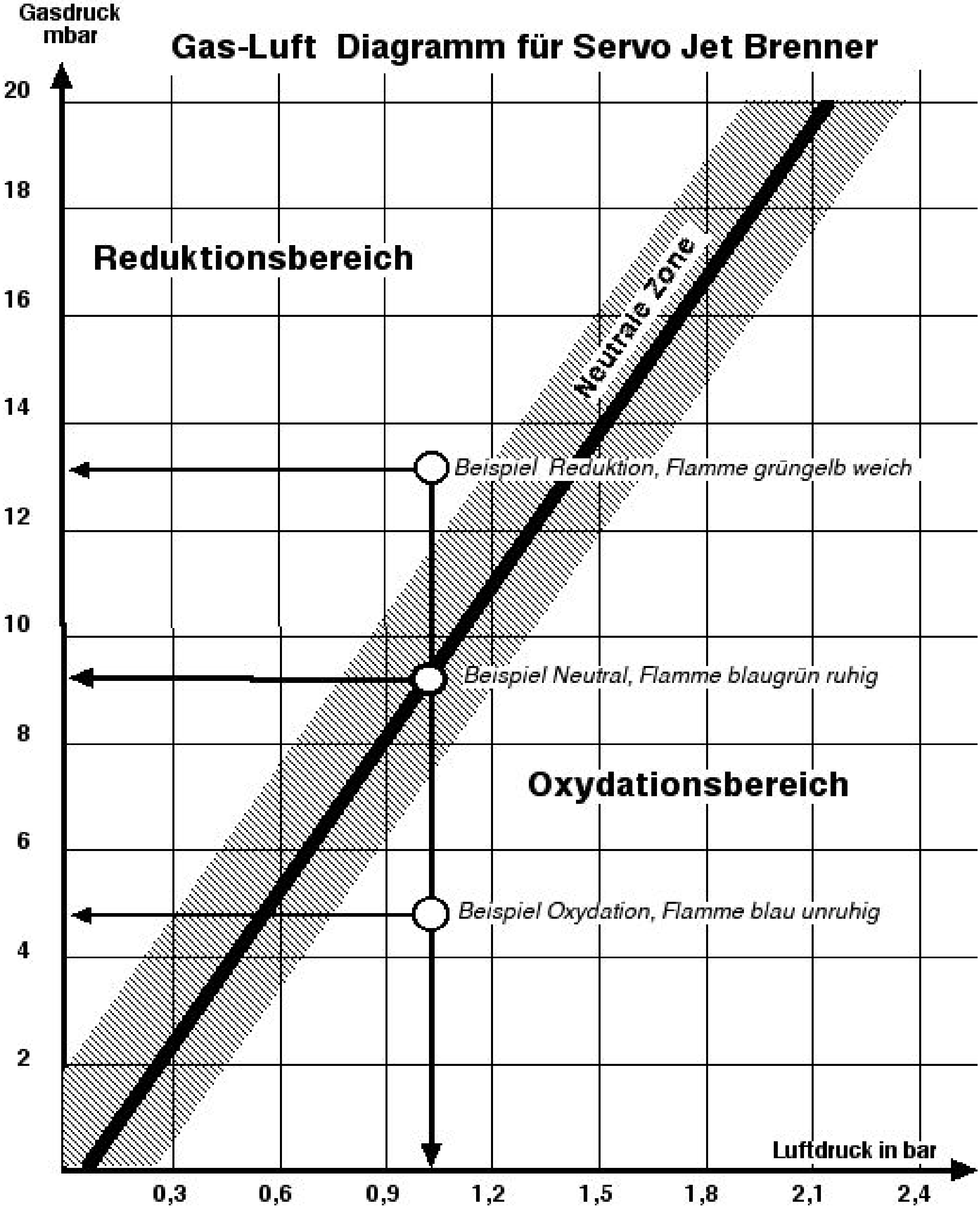
Appendix 2



1 bar = 1.000 mbar
= 10.000 mmWs
= 100.000 Pascal
= 14,5 Pfund/Quadratzoll

Beispiel bei konstanten Gasdruck

Appendix 3



1 bar = 1.000 mbar
= 10.000 mmWs
= 100.000 Pascal
= 14,5 Pfund/Quadratzoll

Beispiel bei konstanten Luftdruck