# General Repair Instructions

# 1 SAFETY INSTRUCTIONS

**Danger!**

Repairs must be carried out by a properly qualified gas fitter only.

Repairs carried out improperly carry with them the risk of danger and damage for the user.

It is essential for the following instructions to be observed to avoid electric shocks:

In the event of a fault, casings and frames may be live.

Avoid touching any constructional components in the appliance, as even modules may carry mains voltage.

Always disconnect the appliance from the mains supply before beginning the repair.

Make use of a current-operated circuit breaker where tests under voltage are necessary.

The protective conductor connection must not exceed the values stipulated by standard. It is of crucial importance for personal safety and function of the appliance.

On completion of the repair, a check in compliance with VDE 0701 or the corresponding regulations for the specific country must be carried out.

After any works are carried out on gas pipe connections, a test for gas tightness must be carried out.

On completion of the repair, a functional test must be carried out.

**Caution!**

The following must be noted to avoid any damage to the appliance or its components:

Never attempt to affect a repair on the basis of randomly exchanging components.

Always adopt a systematic approach and comply with the fault finding instructions.

# 2 GENERAL

This document presents general instructions for the repair of gas appliances.

In its current version (07/2001), it is still incomplete. Additional topics are still being prepared and will be integrated as they become available and are distributed along with new transparencies.

Any hints and suggestions are welcome.

As in the past, appliance-specific instructions are contained in the repair instructions to be called up for each individual appliance.

# 3 GAS-TIGHTNESS TEST

A gas-tightness test must always be carried out when:

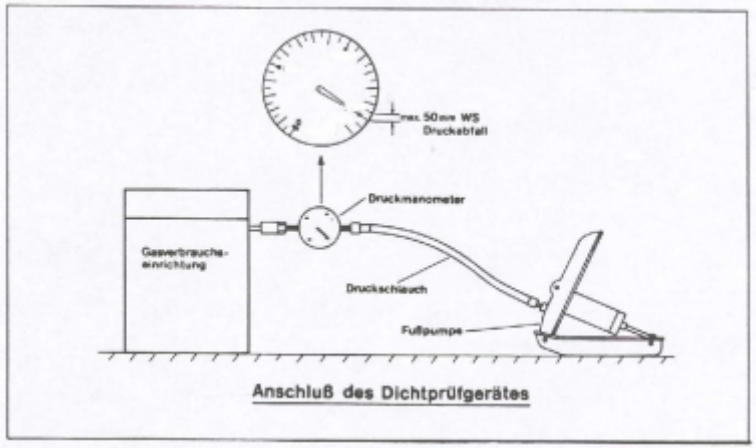
- **A gas pipe connection has been undone**
  Examples: changing a gas tap, undoing the appliance connection, exchanging the safety valve on gas taps with a thermal release.
- **Smell of gas identified or complained of**
- **The appliance is generally in poor condition** (damaged in transit, older appliance)
- **The customer wishes a test to be carried out**

As a basic principle, there are generally 2 methods of checking for gas tightness:

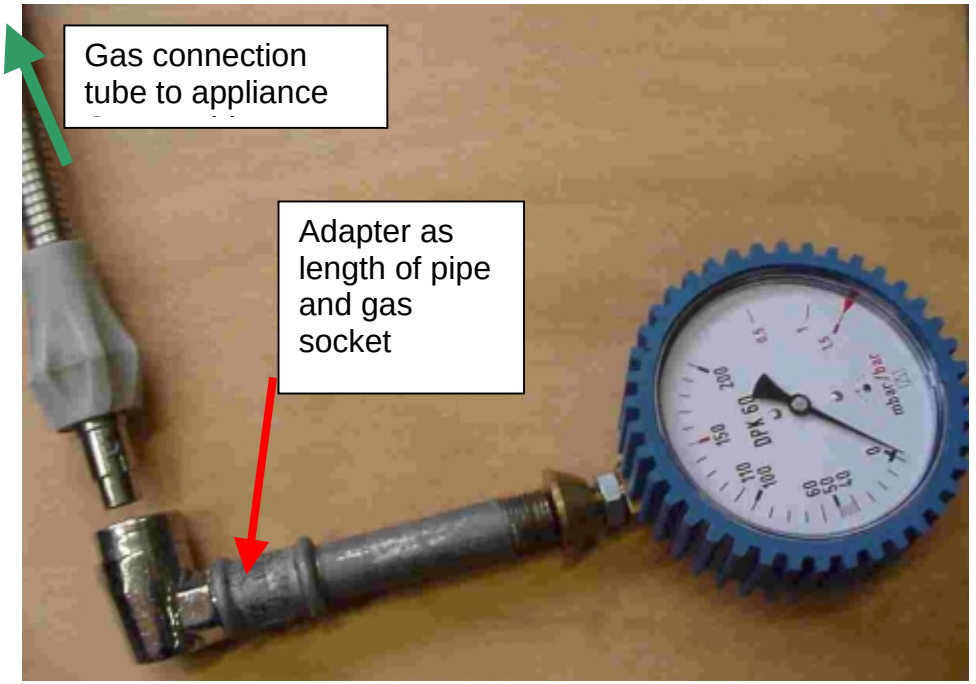
- Testing for gas tightness with a pressure gauge
- Testing for gas tightness with foam

## 3.1 Pressure testing with a pressure gauge

**Gas tightness testing by means of pressure testing using a pump and pressure gauge**




This gas-tightness testing appliance is available under Part Number 340034. It can be connected directly to ½" pipe (using 059155 sponge-rubber sealing plug).
To connect the gas-tightness testing device to a gas appliance connected via a gas socket, we recommend using an adapter as illustrated (short length of ½" pipe on safety gas socket). At present, this adapter must be prepared by the fitter himself.




### 3.1.1 Procedure for primary test

Ensure all controls (gas taps, etc.) are in the off position.

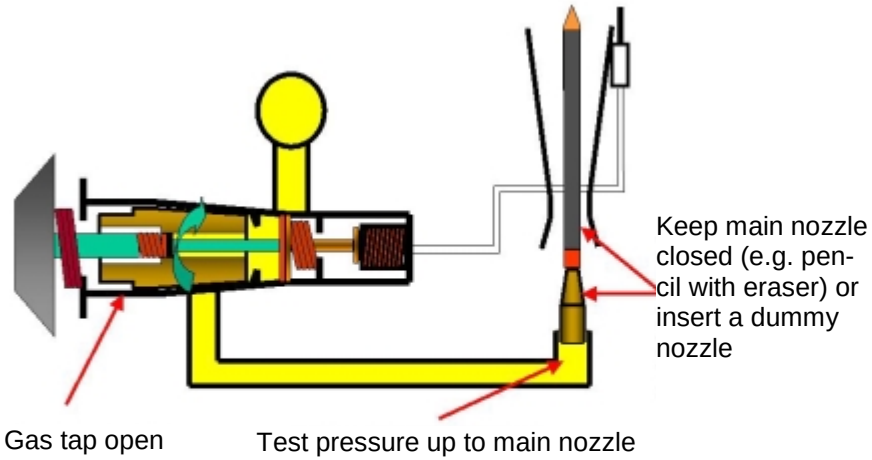
- **Apply test pressure of 150 mbar** (caution: do not 'over-pump').
- **Wait for 5 min as test continues.**
- **Maximum permissible pressure drop: 5 mbar.**

**If any drop in pressure greater than 5 mbar is identified, it is essential that the leak be traced and made good.**

### 3.1.2 More extensive testing

Testing of components only under pressure when a burner is in operation, e.g. the gas tap-burner pipe connection.

If the gas tightness of the appliance is to be tested upstream from the actuator (tap plug or safety valve in gas tap), a more extensive test can be carried out for the purpose. It may be that a device to seal off the nozzle or a dummy nozzle is required.




If, with the nozzle sealed off (blocked with a finger or pencil, main nozzle fitted with solder seal), the actuator is opened, a slight fall in pressure at the pressure gauge (2–5 mbar, as the test pressure is distributed over a larger pipe section) can be observed. However, thereafter the pressure gauge pointer must remain static.

For this more extensive test, no specific testing pressure and no specific testing time are stipulated. The connection is to be regarded as gas-tight if there is no apparent pressure drop indicated by the pressure-gauge pointer.

This test must be carried out when:

- a smell of gas is identified when an appliance is in use
- pipe connections in this area have been undone and there is some problem with the connection technology.

For further instructions refer to: Gas tap with thermal release

## 3.2 Gas-tightness testing with foam

**(testing with leak-detector spray, leak-detector product)**

For this purpose use should only be made of leak-detector product officially approved for the purpose.
A leak-detector product for application with a brush is available as Part Number 340055.
(A solution of water and detergent is not permissible!)

The creation of bubbles on pipework under gas pressure indicates a gas leak.

Pros: low-cost, if only one specific point is to be checked.

Cons:

a) If an entire area must be checked (e.g. widespread smell of gas), definitive findings are practically impossible.

b) As normally work takes place at the normal gas connection pressure, in the cases of natural and town gas in particular (only 20 or 8 mbar gas pressure), it can be difficult to identify small leaks.

c) No 100% definitive statements (”our appliance is gas tight”) can be made and proved.

Even when tracing faults with a pressure gauge (gas-tightness testing device) foam or tightness-testing product must be used to locate the fault.

# 4 COMBUSTION GASES / GAS TYPES

The gases and designations used vary between countries to some extent. However, it is standard throughout Europe to find that the various gases are sub-divided into **3 gas groups**.

The summary below sets out the conditions pertaining in the main European countries:

| Gas group | Gas | Normal connection pressure | Sub-groups (europ. designation Gxx, Wobbe Index* Ws ) |
|---|---|---|---|
| **1** | Town gas | 8 mbar | a (G110, 6.9 kWh/m³)<br>b (G120, 7.68 kWh/m³)<br>c (G130, 11.1 kWh/m³)<br>e (G150, 10.3 kWh/m³) |
| **2** | Natural gas | 20 mbar<br>(NL: 25 mbar) | **H** (G20, 14.1 kWh/m³)**,**<br>**L** (G25, 11.5)<br>(in most European countries:)<br>**E** (G20, 14.1- 11.5 kWh/m3)<br>(in the countries DE, FR, BE)<br>**LL** (G25, 11.4 kWh/m³)<br>(in DE, refer also to natural gas in Germany) |
| **3** | Liquid petroleum gas - LPG | 30 mbar or 28/37 mbar<br>50 mbar (DE, AT, CH) | Butane / propane<br>Mixture of propane / butane |

Notes on the Wobbe Index* Ws:
The figures provided are nominal values. Divergences are permitted (different for the various countries).
The Wobbe Index is the criterion for determining the amount of heating energy provided for a burner from the relevant amount of gas supplied.

The Wobbe Index takes account of the energy content and the viscosity of a gas.
**Ws = Hs / √d** (Wobbe Index = cal. value / root from rel. density)

## 4.1 Licensing for countries and gases in Europe

An appliance carries an additional sticker with details of the countries and gas categories (Cat) for which it is licensed, and from this sticker it can be seen whether the appliance can be used in the relevant country and with the gas available locally. With the introduction of the CE/EC sign (01.01.95), this sticker is obligatory in Europe and is found:

on hobs: normally on the base of the hob

on ovens: on the side wall or on the back wall.

### 4.1.1 Suitability for gases / assignment of appliances to categories:

Operation with gases from x gas group (of three) possible
Cat I: 1 gas group
Cat II: 2 gas groups
Cat III: 3 gas groups

In addition, the individual gas groups and sub-groups (see left) are indicated.

Example: (notional)

Prod. Ident. No. 0085AU0052

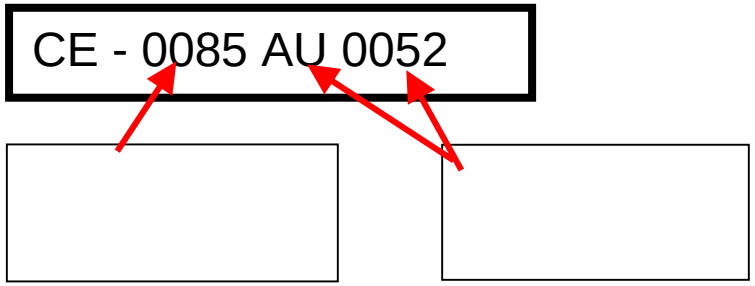
| | | |
|---|---|---|
| IT | II 2H3+ | 20 mbar<br>28–30/37 mbar |
| FR | II 2E3+ | 20 mbar<br>28–30/37 mbar |
| NL | II 2L3B/P | 25 mbar<br>30 mbar |
| DE | II 2E,LL3B/P | 20 mbar<br>50 mbar |

### 4.1.2 CE Number - licensing

For the purposes of approving / licensing appliances, testing centres issue what is termed a CE Product Identification Number. This has been a prescribed practice since 1.1.1996 when the European Gas-Appliances Directive came into force.

Various European certification offices, known as ”Notified Bodies”, are authorised to test and proceed to issue a Product Identification Number.

This number (also referred to as the ”CE Test Number) is quoted on the rating plate, appearing in the following form (example) :




In some cases, this number is requested by installing companies or gas suppliers even before appliances are made available (these bodies can calculate technical specifications for gas appliances by referring to the Product Identification Number, thus permitting them to plan installations and networks).

For queries in this connection:

For some appliances, the CE Product Identification Number is quoted in the Repair Instruction document. A list of additional appliances is provided in TSI T0-30/0002D
(allocated, for example to the appliance ”**REPARATURANL03**” (REPAIR INSTR03) or **ER51154/01, PGF365K/01**, **N2462N0/01**).

## 4.2 Natural gas – special aspects in Germany

In Germany, the assignment of natural gas sub-groups takes place in two different ways:

a) assignment from point of view of gas supplier (GVU)

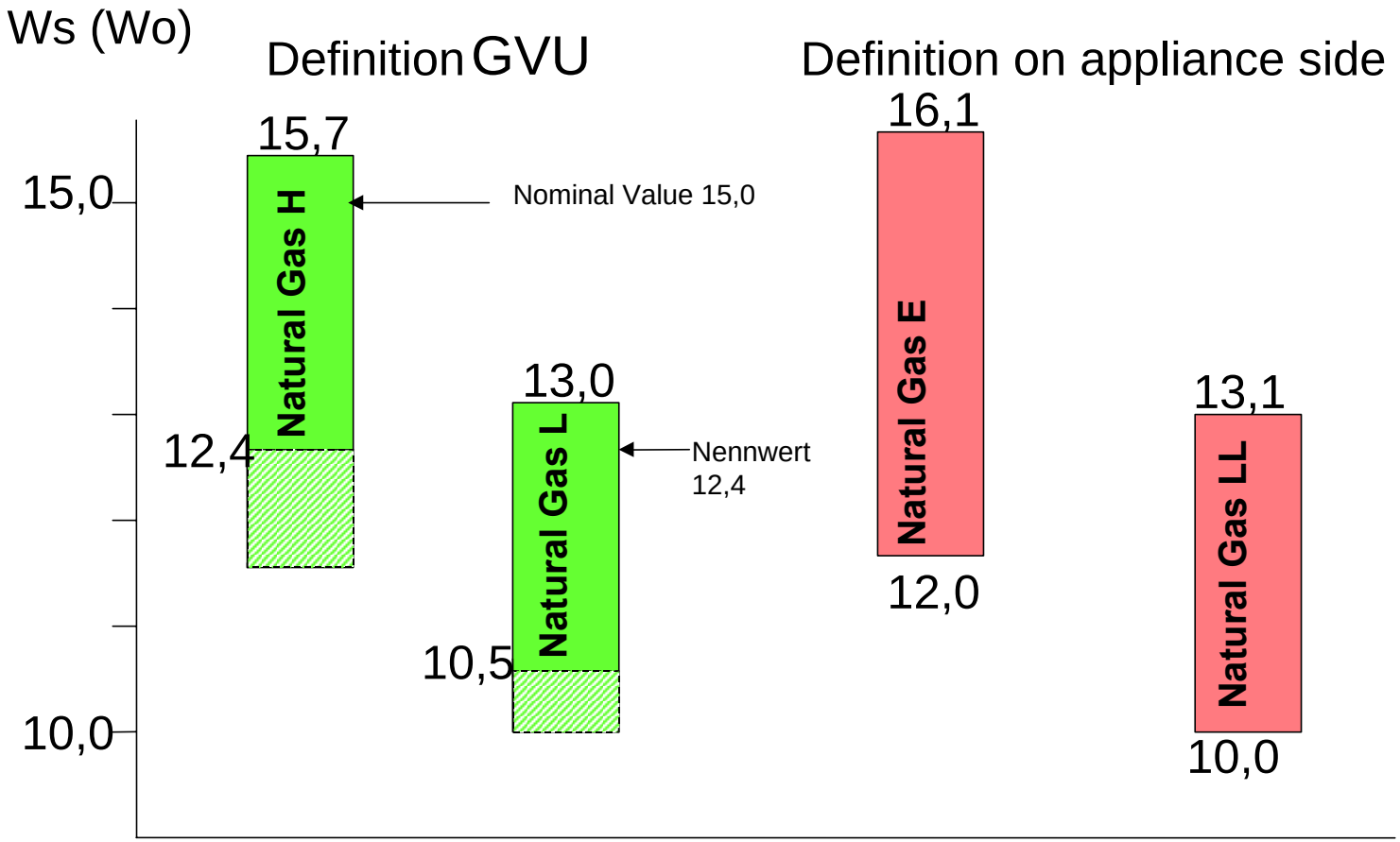
b) assignment from point of view of appliance (gas consumer / appliance manufacturer)

**In both cases, however, the main criterion for assignment is the Wobbe Index Ws (Wo).**

This Wobbe Index is the criterion for determining the amount of heating energy provided for a burner with the relevant amount of gas supplied.
The Wobbe Index takes account of the energy content and the viscosity of a gas.

**Ws = Hs / √d** (Wobbe Index = cal. value / root from rel density)

At Wobbe Index < 13.1 kwh/m³ the use of LL natural gas nozzles is permitted.




Conversion of MJ/m³: divide value (MJ/m³) by 3.6.

# 5 COMPONENTS AND FUNCTIONS

## 5.1 Gas tap

By means of the gas tap:

- the flow of gas is released and adjusted by the user
- the gas volume for the small flame is set by means of the small flame nozzle installed.

### 5.1.1 Construction types

- gas tap with no thermal release (no safety valve)
- gas tap with straight-through type thermal release
- gas tap with angled-type thermal release (angled tap, operating axis angled at 90° to valve axis)

For some time now in gas appliances in general use has been made only of gas taps including only the small flame nozzle (bypass nozzle). In this case, the main nozzle (injector) is seated in the burner.

However, there are still older gas tap versions (manufactured up to 1992) in which both the main and the small flame nozzles are integrated within the gas tap.

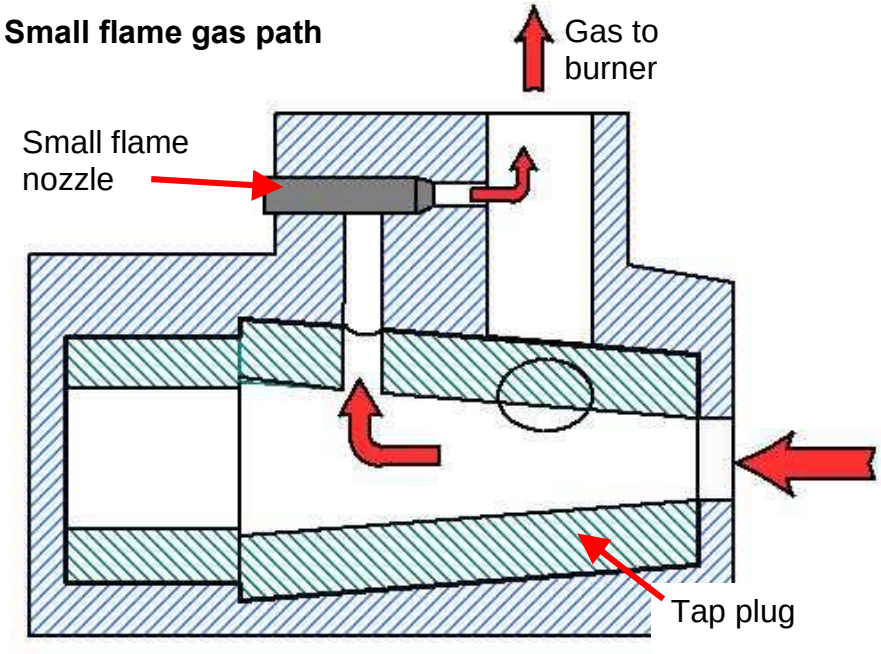
### 5.1.2 Low setting output

5.1.2.1 General:

Within a construction series use is made of gas taps with identical casings and identical tap plugs (the part which turns inside the gas tap).

The difference between the individual gas taps in a construction series relates only to the size of the small flame nozzle in use or the adjustment of this small flame nozzle.

5.1.2.2 Small flame nozzle and adjustment of small flame

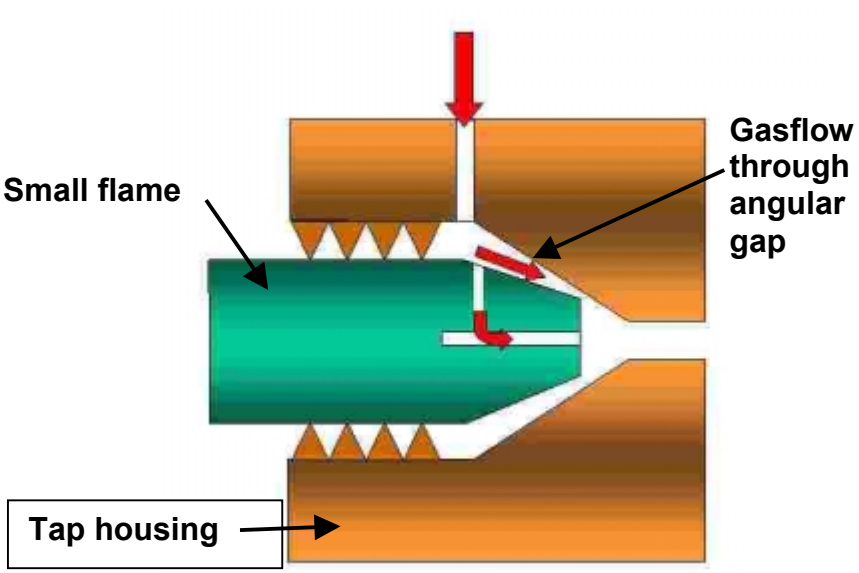



Each burner requires a minimum quantity of gas to ensure stable burning. (If this amount of gas is not supplied, the burner goes out, however when the design delivers excessive gas quantities for the low setting, customers tend to complain that ”food is burned”.)

The necessary minimum amount of gas is specified exactly through the use of special small flame nozzles (bypass) for each type of gas and burner output.

**a) Small flame setting with fixed end-stop**:
The small flame nozzle is turned into its seating as far as the fixed end stop, with the volume of gas for the small flame being determined solely by the size of the bore of the nozzle. The smallest nozzle diameters are required in the case of operation with liquid gas (due to the high energy density of the gas and the relatively high connection pressure of 30 or 50 mbar). The nozzle sizes are stamped on the top of the nozzle (e.g. 32 = bore diameter 32/100 mm).

**b) Small flame setting on ”annular gap”:**
Turning the small flame nozzle out slowly produces a conical gap between the pointed end of the nozzle and the tap housing (= ”annular gap”). Accordingly, the volume of gas passing through this annular gap can be increased to any value, and the small flame adjusted. No method of measurement is provided, as adjustment is judged by eye (” as small as possible, as large as necessary”).




Condition: the bore of the existing nozzle at the fixed end stop must give rise to a smaller gas flow than is required for the burner.

It is necessary to check for stable burning (burner at operating temperature, rapid switching between high and low settings, moderate draught produced by fanning.)

In some cases appliances for operation with natural or town gas are delivered with this small flame setting adjusted by the annular gap (nozzle bores on the small flame nozzles for liquid gas).

### 5.1.3 Use of gas taps supplied as spares

When a gas tap is ordered as a spare part, what is frequently delivered is a gas tap with a small flame nozzle which is not suitable for the gas type and burner size required for the appliance.

**The small flame nozzle in the ”old” gas tap must be removed and fitted to the new tap!**

### 5.1.4 Adjustment characteristics.

The component parts of a gas-tap housing which determine the gas flow feature identical sections, but the following are regulated:

- varying burner strengths (burner outputs)
- different gas types (different flow volumes for the same burner output)

This set of conditions results in the following **adjustment characteristics**:

Primarily in the case of small burner outputs and liquid gas operation, the adjustment curve is pushed against the fixed end stop (low setting) and compressed.
In some cases this behaviour leads to customer complaints: (”does not adjust properly, cannot be adjusted properly, flame only becomes smaller just before the fixed end stop”).

However, in almost all cases this manifestation is not a technical fault, and occurs in all appliances in which the gas taps are designed for different types of gas. Our competitors also use gas taps of this type.

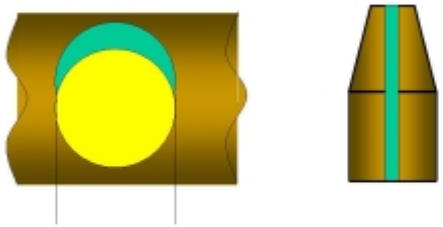
With appliances with gas taps also designed for operation with town gas (large bore required due to large flow volumes or low energy content of gas), this manifestation also appears under natural gas operation.

Theoretically, the partial blockage of bores in the gas tap (due to excessive tap plug greasing) can result in these symptoms. Nevertheless, experience indicates that blockages of this kind occur extremely seldom.

5.1.4.1 Justification of adjustment characteristics: example

**Gas-flow section:**

Tap plug Main nozzle



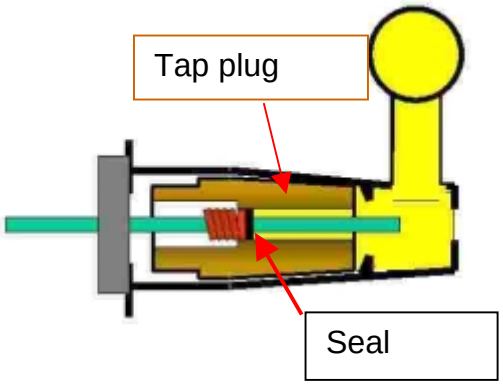
Operating range:
~0.9 mm$^2$ (designed for town gas)

Nozzle bore:
town gas ~4 mm$^2$
LPG ~0.3 mm$^2$

Example: liquid-gas operation
Alteration of the section from 9 to 2 mm$^2$ results in no significant change in the size of the flame, as the nozzle bore is still distinctly smaller (0.3 mm$^2$)

## 5.1.5 Tap plug:

The tap plug is the part inside the tap housing which turns and is ground to fit into the relevant housing in a conical arrangement. It is pushed into the sidewalls of the housing under sprung pressure. The holes drilled for gas regulation and the small flame are found in the tap plug.




**Tap-plug grease:**
Special grease (tap-plug grease, e.g. Staburags N32, Spare Part Number 310354) ensures that this passageway is gas-tight and that the tap plug can still be turned in the housing.

5.1.5.1 Inadequate greasing

**Inadequate greasing** or instances of the grease hardening result in the gas tap becoming difficult to operate, or even jamming, and to increased wear in components.

5.1.5.2 Excessive greasing

**Excessive greasing** can result in the bore holes being partially misaligned within the housing. possible incorrect flame patterns:

- flame goes out at small flame setting:
  small flame bore misaligned
- part of main bore misaligned:
  flame goes out between high and small flame settings

**Remedy:**
Dismantle the front plate, clean the tap or add grease. When cleaning the tap and the tap plug do not use any hard tools, as scratches in the brass leaks!

5.1.5.3 Leaks to the front:

Leaks can occur as a result of scores/scratches in the sidewalls or due to a poorly-seated field at the axis.
Gas escapes at the tap spindle or behind the front plate.

If this leak should occur at a number of taps on an appliance, the cause can be suspected as temporary excessive gas pressure (faulty pressure regulator or liquid-gas system).
The pressure regulator should be checked or replaced.

Depending on the arrangement of the bores and the location of the leak, in the case of gas taps with no thermal release and in the case of most angled taps with a thermal release, gas may escape permanently, even when the tap is turned off.

## 5.2 Gas tap with thermal release

In some appliances, the flame is monitored by a thermal release or the gas supply is automatically interrupted by a safety valve in the gas tap if the flame goes out.

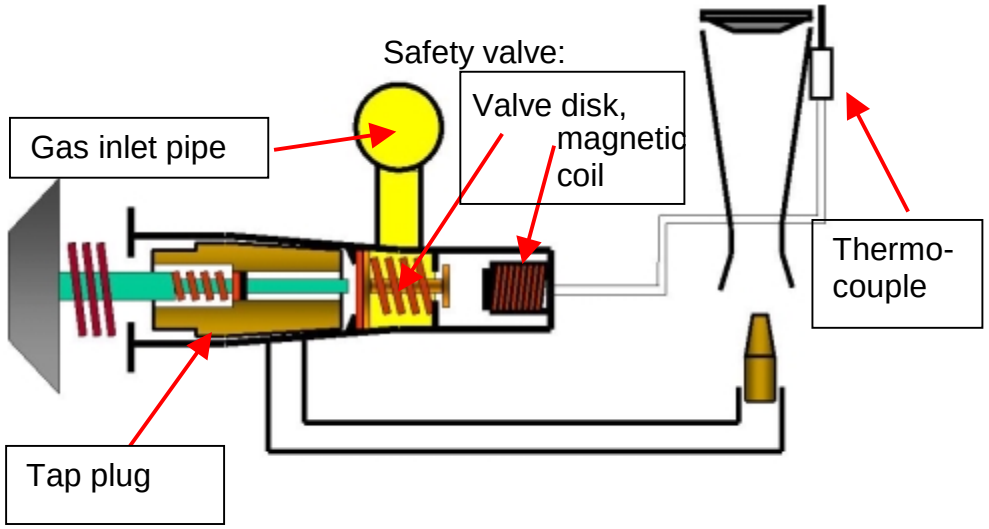
In some countries, in the domestic sector only appliances with a thermal release may be used.

At present, only systems with a thermo-electric safety pilot (the thermocouple automatically generates voltage in accordance with the Peltier effect) are used.

### 5.2.1 Thermo-electric safety pilot

Construction and function: (illustrations without small flame nozzle)

5.2.1.1 Burner in off position:

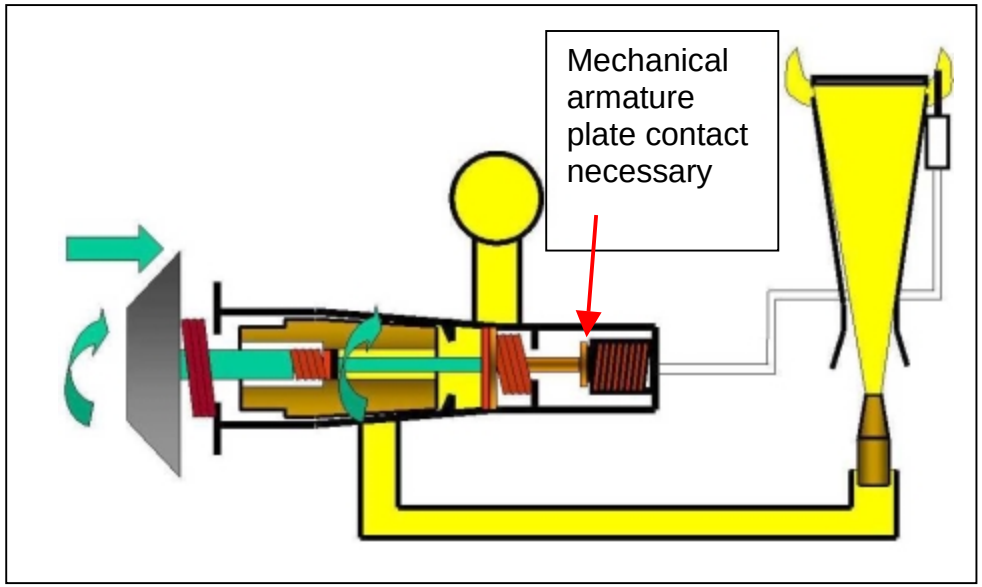



In the off position, the safety valve disk is pressed against the end-stop by the spring, thus closing off the flow of gas into the tap.

Accordingly, in the off position there is no gas pressure at the tap plug. Any leak in the area of the tap plug would therefore have no effect:

- no escape of gas in the off position
- no loss of pressure on testing for gas-tightness in the off position.

5.2.1.2 Burner in operating position

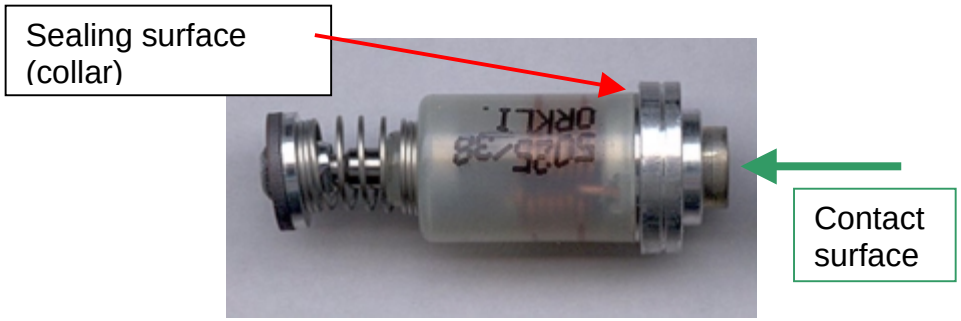



**Lighting the burner:** procedures as follows:

- Press in gas tap: pressure exerted on safety valve
- Turn on: gas to burner
- Ignite: flame heats thermocouple
- Thermo-voltage generated current in magnetic coil
- Magnet holds position after 3–10 sec., if mech. contact
- Conditions required: thermocouple well seated, mechanical contact between armature plate and magnetic coil inside safety valve.

**Safety function:** when the flame goes out, the thermal electromotive force drops the magnet loses its hold and no more gas can flow.

5.2.1.3 Safety valve (magnetic insert)




The valve disk, pull-back spring, armature plate and magnetic coil are integrated in the magnetic insert. In the case of gas taps with a thermal release, this magnetic insert can be replaced as a spare part.

The gas tightness in the rear area of the tap (threaded aluminium cap) is created by the pressure of the magnetic insert collar against the sealing surface inside the tap. This pressure is generated via the thread on the threaded cap.

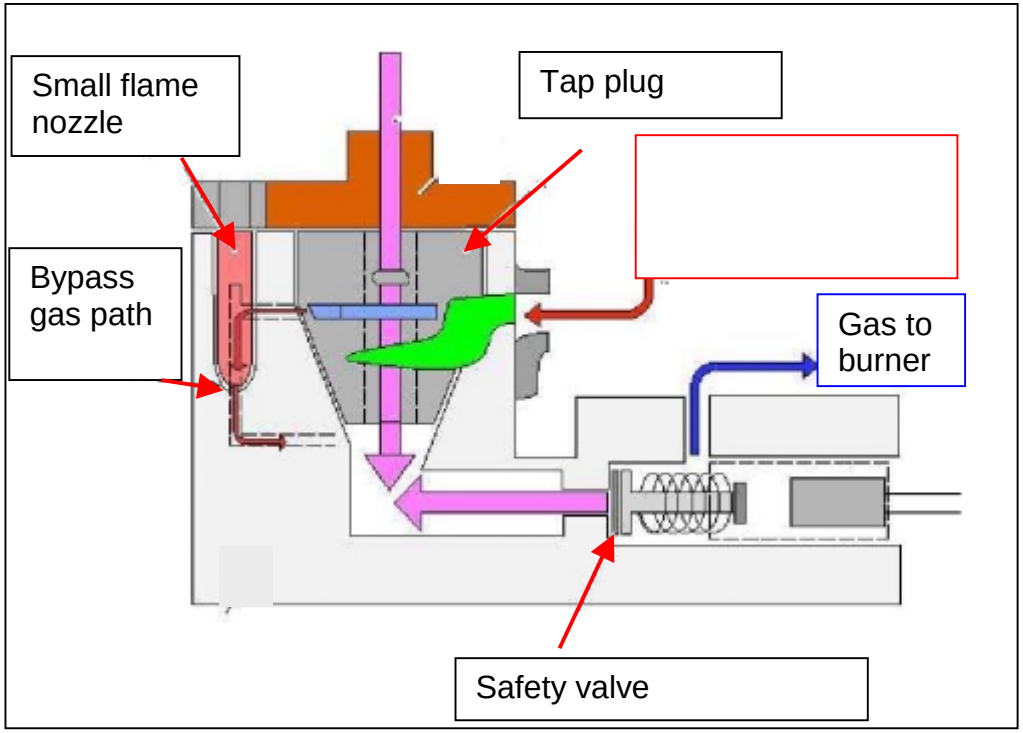
For this reason, this threaded cap Is screwed on very tightly, and can often be difficult to remove.

**It is essential to apply counter pressure to the gas tap to avoid damage and the risk of causing leaks in the supply line at the tap seating!**

In the case of straight-through taps (see previous page), even in the off position the sealing surface between the magnetic insert and the gas tap is under gas pressure.

**Carry out a gas-tightness test after replacing the magnetic insert!**

## 5.2.2 Angled tap with thermal release:

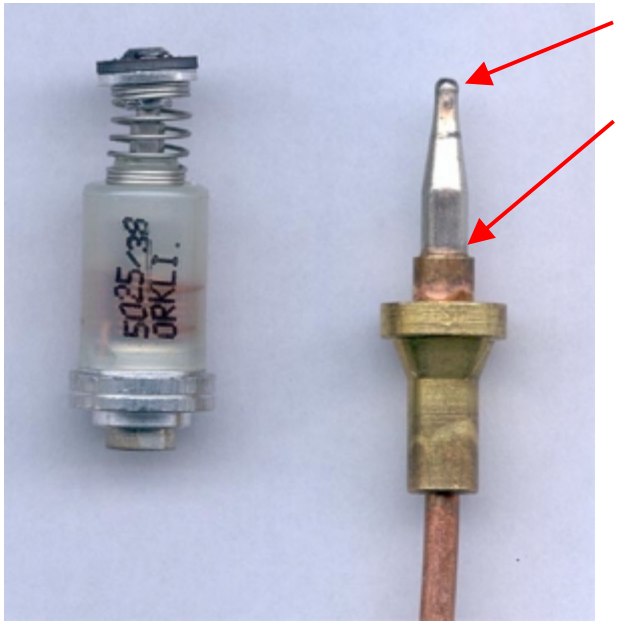



The function of the angle tap with thermal release is basically the same as described above (straight-through gas tap).
There are, however, **2 differences:**

- The operating spindle-safety valve activation path is realigned by 90 degrees (push-rod system, susceptible to wear)
- Valve seated (in most construction types) at tap outlet (gas path in burner direction), not at inlet.
  Leaks in the vicinity of the tap plug/tap spindle can also result in escaping gas, even with the safety valve closed. In some construction types, even the small flame nozzle is constantly under pressure (even with the gas tap turned off)
  Gas-tightness test necessary even after exchanging nozzle.

### 5.2.3 Thermal release: component parts

When heated correctly, as a result of the Seebeck effect the thermo-couple automatically delivers a thermo-electromotive force which – depending on version and degree of heating – represents between approx. 5–30 mV (measured under no-load conditions, power circuit not closed).
As a result of the low level of thermo-electromotive force, minimal transition resistances in the system (contact at magnet, soldering point on coil) result in the valve not remaining open (”flame does not stay lit”).
The temperature differential between the tip and what is referred to as the cold-solder point on the thermocouple is crucial for generation of the required voltage.




There are many types of thermocouples and magnetic valves in existence. These are differentiated by, among other things, electrical, thermo-electrical and mechanical properties (retaining current, level and run-up behaviour of the thermo-electromotive force, retention or throw-off force of the solenoid valve). Within appliances, these versions are combined and checked along with the existing burners to ensure that the required system function is provided.

**Only those components documented in the relevant lists of spare parts may be used and combined!**

#### 5.2.3.1 Requirements for the thermal release

The thermal release must guarantee the following functions:

- **Holding time** (time after which the thermal release holds automatically):

  **As per DIN EN 30: max. 10 sec.**
  Experience has shown that holding times of over 5–8 sec. result in customer complaints.
  **”normal”: 4–7 sec.**
  NB:
  There are also systems which hold more rapidly or operate using a special rapid-start device by means of external voltage.

  Longer holding times can be traced back to component tolerances (burner, thermocouple and magnet), however it is practically impossible to identify the component causing the problem.

- **Delay time** (time after the flame goes out within which the thermal release must cut out, at latest)

  90 sec. for cooking points

  60 sec. for ovens

5.2.3.2 Malfunctions, causes and fault finding

As a basic principle, the components used are not subject to natural wear. The main problems with components are set out in the following checklist:

With the resources available to Customer Service, exact diagnosis of the component causing the problem is not always possible. Nevertheless, a systematic approach can be adopted.

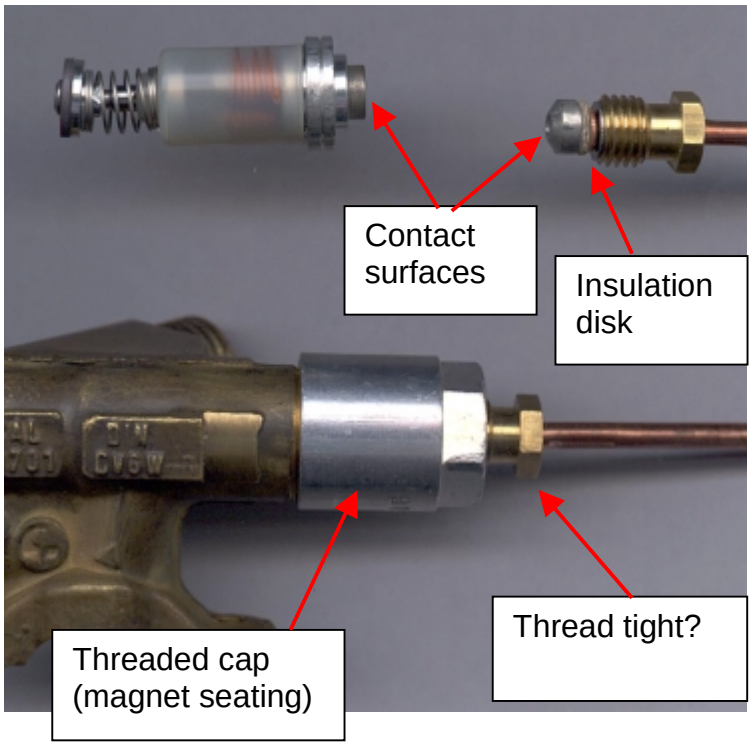
5.2.3.3 Complaint: ”The flame does not stay lit”

Step-by-step procedure: work through points until the cause is identified.

- Visual check of thermocouple heating and position:
  How is it standing in the flame? In the small flame, in the high flame? Optimum heating when the point is standing only in the periphery of the flame.
  Flame pattern correct (heating flame breaking up or intermittent?)
- Operation by the customer:
  Is the spindle pushed in far enough and at the right time? (Tip: ”Press in firmly again shortly before releasing”)
- Mechanism:
  Can the tap spindle be pressed in far enough with the knob in place? Test without knob or (oven hob with internal gas taps) with no telescopic connecting rods, or adjust tap pipe, as required, adjust telescopic arrangement.
- Electrical connection – thermocouple to gas tap:
  Is the threaded connection properly tightened? Undo screw and check/scrape clean contact surfaces and re-tighten.
  Check whether insulation between internal and external conductors is in order.
- Replace thermocouple.
- Replace magnet.

Comments:
Measurements for diagnostic purposes (thermocouple okay? thermo-electromotive force adequate?) are time-consuming. Testing with a new part is more rational.

However, it may be the case that by connecting a thermocouple from a properly-functioning adjacent burner, it is possible to reliably locate faults.
Holding function with thermocouple from adjacent burner okay? defective thermocouple
Magnetic inserts may also display faults only sporadically (foreign bodies on the armature plate)

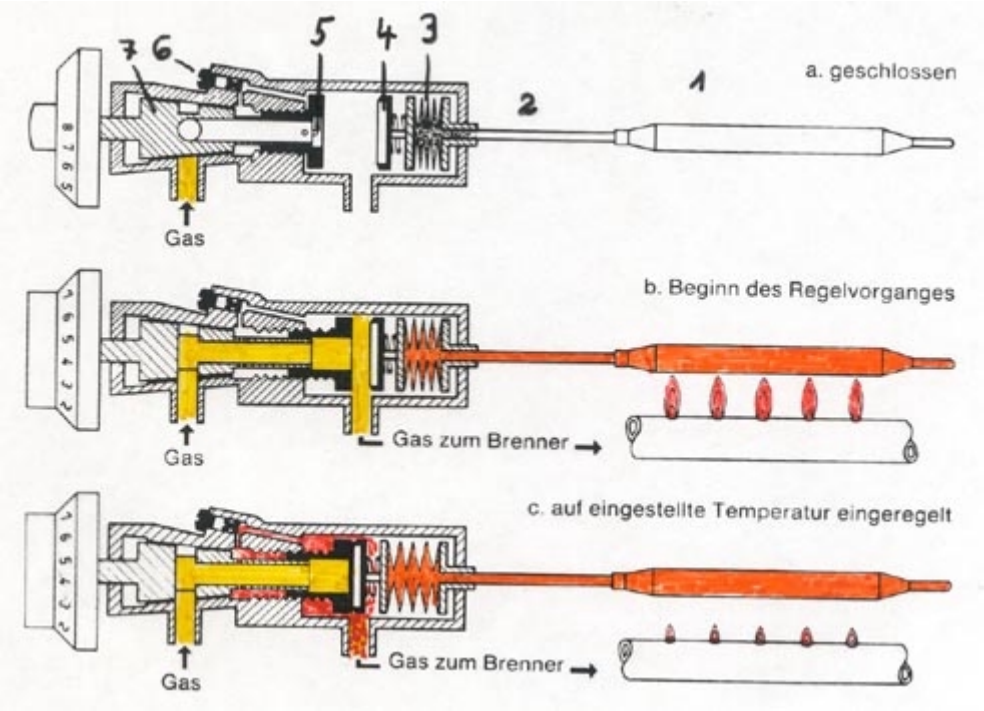


## 5.3 Gas oven regulator

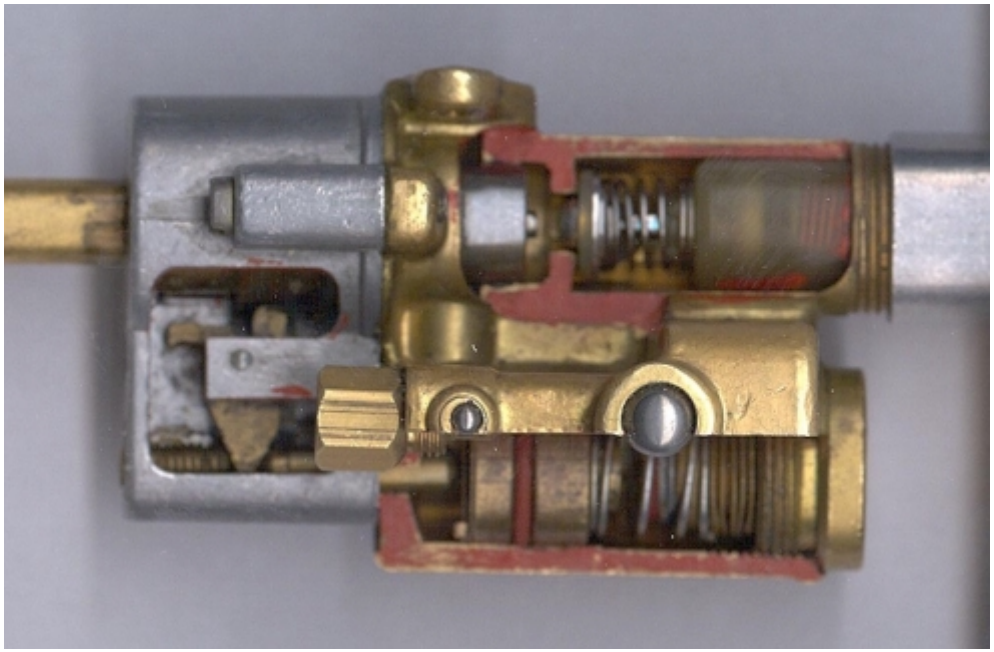
### 5.3.1 Function

A thermostatically regulated gas flow allows exact temperature regulation with only minimal exceeding of a set temperature by a few °C (depending on the oven space, geometry and burners).

The tap plug (operated by the spindle) within the regulator provides only the single function of gas supply on/off. Dosing of the gas flow is carried out by a valve disk which is positioned above a bellows by the temperature sensor (capillary tube).




In cold state, the flow of gas through this valve disk is maximised, irrespective of the temperature setting. The maximum burner output channelled through is determined by a main nozzle located externally (in the oven burner). As the sensor heats up, the valve disk is pushed back by the bellows and the volume of the gas flow is gradually reduced.



The set turning angle for the operating spindle (temperature preselection) tensions a counterpart against the valve disk by means of a spindle and push-rod system, thus influencing the volume of gas flow and, in the final analysis, the prevailing temperature in the oven.

If the control is turned to a low temperature when the sensor is hot, the gap between the valve disk and the initial tension plate closes. At this point, the supply to the burner is taken over by the bypass gas path only (via the small flame nozzle). In this state, it is possible to assess the small flame volume at the oven burner, or – by turning the small flame nozzle – to change it.

There are also oven regulators with which the regulating gap can be closed mechanically to allow adjustment of the small flame (press home with testing needle 015459), so that it is not necessary to heat up the oven.

### 5.3.2 Repair instructions

For oven regulators with capillary tube regulators, the same basic instructions apply in respect of the function of the thermal release and the small flame (bypass nozzle), as for the gas tap.

**This applies in particular for the necessity to replace the small flame nozzle when fitting a spare part (refer to testing small flame).**

**However, the front plate on the oven regulator should not be opened to allow work on the tap plug (greasing, cleaning, etc.).**

In this case there is then a great danger that the complex mechanism of the regulator will no longer function properly.

### 5.3.3 Checking regulation function

Temperature measurement is necessary to check the regulation function. However, the following points should be checked in advance:

5.3.3.1 Checking small flame / flame pattern

- Flame pattern / burner air setting in order?
- Small flame in order?
  rapid test with testing needle 015459 or
  heat up for 10 minutes and turn back to lowest temperature,
  keep flame as small as possible, however burning evenly.

5.3.3.2 Measurement / settings:

Position sensor for media in gas form on the grating in the exact centre of the oven, and avoid any contact between the sensor plate and the grating.

| | | |
|---|---|---|
| Hot air: | 160° | Tolerance*: +/– 5° or +/– 10° |
| Conventional: | 190° | Tolerance: +/– 10° |

* +/– 5° for appliances with separate regulators for hot air and conventional.

An excess temperature fluctuation of 5 – 10 °C is normal. For checking purposes, wait until prevailing temperature is reached without changing setting. (approx. 10 min. from cold).

5.3.3.3 Regulator temperature adjustment

In some types of regulator, the temperature curve can be repositioned by means of an recessed screw (1.5 Allen key).

+ direction = higher temperature,
one graduation mark = 15 °C.

Only the regulation curve is changed, as the max. and min. temperatures are dependent on the volume of main or small flames (nozzles) along with the quality of gas and construction of the oven.

# 6 TESTING AND AUXILIARY TOOLS:

## 6.1 Gas-tightness testing appliance

**Gas-tightness testing appliance**

(case with pump, pressure gauge and sundries) Ref. No. 34 0034

(associated spares from: Afriso- Euro-Index Lindenstr.20, 74363 Güglingen 07135 1020, see below)

Replacement test plug Ref. No. 05 9155

Adapter (socket and ½" pipe) DIY

Dummy nozzles DIY

Spare Schrader valve (from filler pipe) Ref. No. 06 5644

### 6.1.1 Spare parts for gas-tightness testing appliance:

Available from: Afriso- Euro-Index Lindenstr.20, 74363 Güglingen 07135 1020

| | Order No.: |
|---|---|
| Pressure gauge: | 39601 |
| Foot pump: | 39190 |
| Pump hose: | 63033 |
| Wooden case: | 39200 |
| Knurled thumbscrew ½" | 37314 |
| Rubber sealing plug ¾" (D = 20 mm) | 63022 |
| Non-return valve, complete: | 39220 |
| Seals | 39215 |

## 6.2 Special tools / opening gas appliances:

Most of these tools are included in the spare part list:

Free standing ovens FBH to FD7301 ("Primus"), Ref. No. 34 0002

FBH hob key, oven hobs from D7401 Ref. No. 15 9923

Assembly lever for glass-ceramic gas hobs
(oven and hobs with integrated control panel) Ref. No. 16 9093
also suitable for Gaggenau WOK VG230 / VG330 and N2222N0
(GK-Domino ´94 -´99, burner-head threaded connections)

Assembly aid (support strips for Domino glass-ceramic hobs from FD 7905) Ref. No. 35 9286

Assembly lever for glass-ceramic switch hobs from FD8105 Ref. No. 48 3196

## 6.3 Oven burners, oven regulators

Robax Special, glass plate Ref. No. 34 0043

Testing needle (1.5 mm ∅), narrow-band testing Ref. No.. 01 5459

2.5 mm Allen key, regulator adjustment Standard tool

## 6.4 Miscellaneous

Teflon tape (for lab purposes only) Ref. No. 25 5550

Hemp and cement Trade

Condensation mirror Ref. No. 34 0035

Tap plug grease Staburags N32 Ref. No. 31 0354

"Screw loosening agent" (Lubra metallic pen. oil) Ref. No. 31 0373
(NB: do not use on gas tap, as this attacks tap plug grease!)

Box spanner 5.5 AF for nozzle width (EGA-Br) Ref. No. 26 9605

FBH integrated oven assembly kit Ref. No. 03 1612

40 cm ignition cable Ref. No. 02 1853

120 cm ignition cable (oven) Ref. No. 02 9975

Ignition cable insulating tube Ref. No. 02 1935

Lixsteel stainless steel cleaner Ref. No. 46 0739

Monidur metal polish Ref. No. 31 0065

Hose for pressure testing Ref. No. 05 4011

Holding screwdriver (bypass nozzles) Hoffmann catalogue 66600 size 3.5/115

Stainless steel screw, countersunk Ref. No. 15 1703
(FBH hob mirror, integrated hobs < FD74xx)