



บริษัท เอดีดี เฟอร์เนส จำกัด

ADD FURNACE CO.,LTD.

44 ซอยบรมราชชนนี 70 ถนนบรมราชชนนี แขวงศาลาธรรมสพน์ เขตทวีวัฒนา กรุงเทพฯ 10170

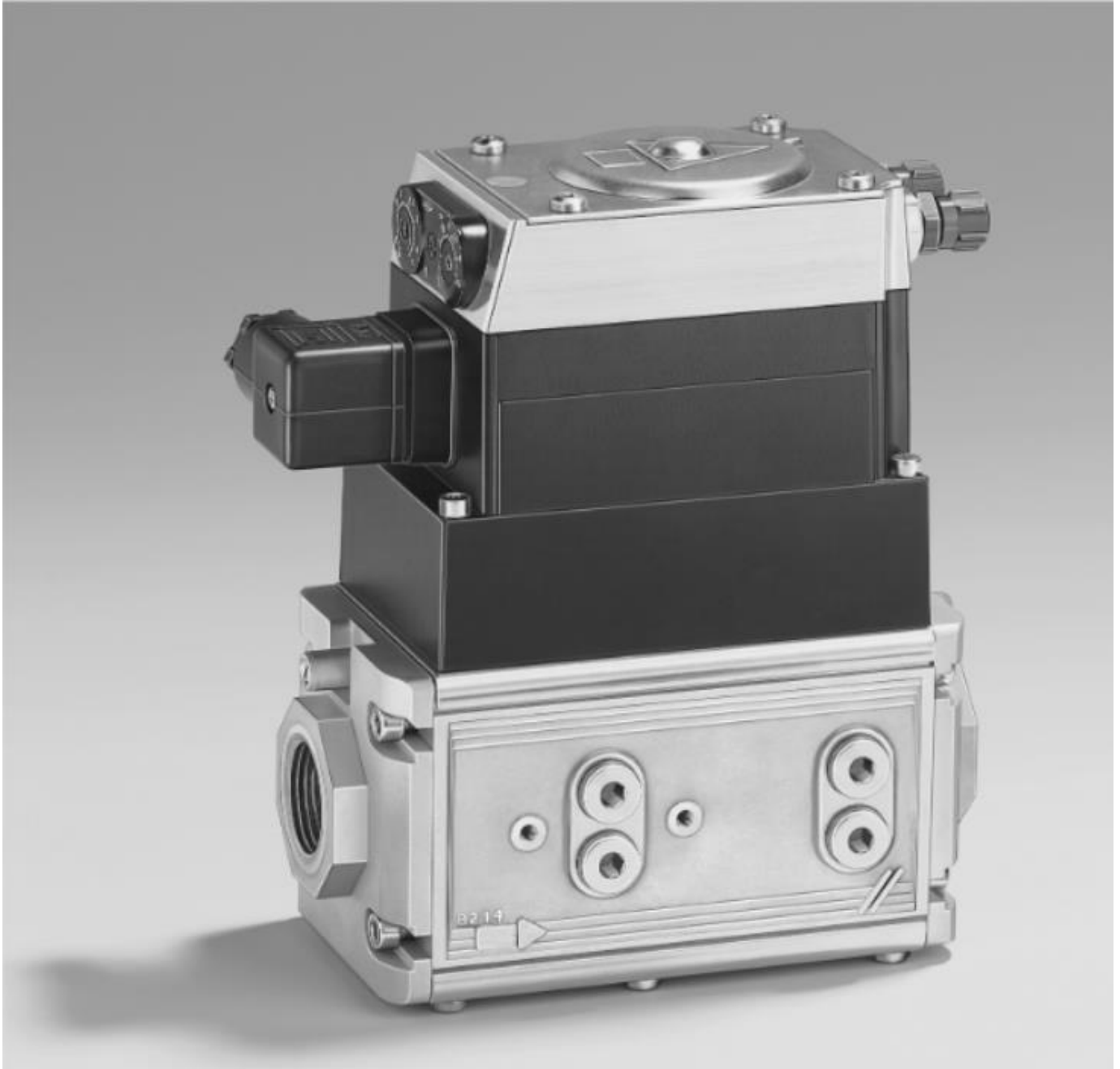
โทร: 02-888-3472 โทร: ออกแบบ:08-08-170-170 แฟกซ์: 02-888-3258

<https://www.add-furnace.com> E-mail: sales@add-furnace.com

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krom
schroder



Combination controlsCG 15–30

Operating instructions

- Please read and keep in a safe place

Explanation of symbols

●, 1, 2, 3 ...= Action

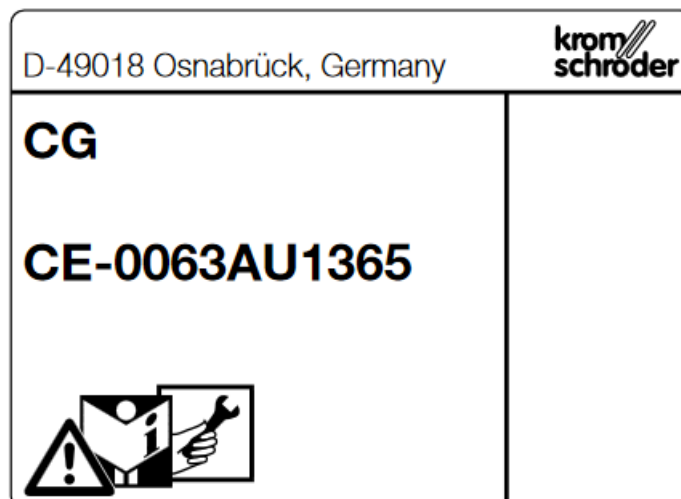
→ = Instruction

All the work set out in these operating instructions may only be completed by authorized trained personnel!

WARNING!

Incorrect installation, adjustment, modification, operation or maintenance may cause injury or material damage. Read the instructions before use.

This unit must be installed in accordance with the regulations in force.





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Declaration of conformity

We, the manufacturer, hereby declare that the products CG, marked with product ID No. CE-0063AU1365, comply with the essential requirements of the following Directives and Standard:

Directives:

- 90/396/EEC,
- 2004/108/EC,
- 2006/95/EC.

Standards:

- EN 126,
- EN 12067-1.

The relevant products correspond to the types tested by the notified body 0063.

Comprehensive quality assurance is guaranteed by a certified Quality System pursuant to

DIN EN ISO 9001 according to annex

II, paragraph 3 of

Directive 90/396/EEC.

Elster GmbH

Scan of the Declaration of conformity (D, GB) – see

www.docuthek.com

Combination controls CG..

For safeguarding and controlling atmospheric gas burners, fan-assisted burners and fan-assisted boilers of all types, single or two-stage-control, with a capacity of 2 kW to 1.5 MW.

For natural gas and LPG (gaseous).

Ambient temperature:

-15 to +60°C.

Enclosure IP 54 in accordance with IEC 529 if using socket outlets to ISO 4400.

Inlet pressure $p_e = 10$ to 360 mbar.

Air control pressure $p_L = 0.3$ to 40 mbar.

Max. counterpressure = 150 mbar.

Persistence time: approx. 0.5 s.

Full opening time: approx. 5 s.

Closing time $d \leq 1$ s.

Pressure regulator Class A, valves Class A.

P: 20 VA, 17 W, $\cos \varphi = 0.83$,

TC-prepared:

P: 22 VA, 19 W, $\cos \varphi = 0.83$.

The electrical power of the units is the same both when switching on and in continuous operation.

See brochure for further data.



Type code

CG = Type

15, 20, 25, 30 = Model

R = Rp thread*

– = Without flange

360 mbar max. inlet pressure

D1 = Pressure regulator without start rate

D2 = Pressure regulator with start rate

Z = Two-stage regulator

G = Air/gas ratio control

V = Variable air/gas ratio control

50 = 50 mbar max. outlet pressure*

H = 24 V AC

W = 230 V AC

5 = without socket

6 = with socket

Y = Lateral screw plugs*

C = Lateral screw plugs and prepared for TC*

W = Pressure switch DG 35C*

WV = Pressure switch DG 45/VC*

WZ = Pressure switch, special version*

F0= Strainer module*

F1= Filter module*

G15–40 =

Straight flange in inlet + DN**

W15–40 =

Angle flange in inlet + DN**

– = Without inlet flange

G15–40 =

Straight flange in outlet + DN**

W15–40 =

Angle flange in outlet + DN**

– = Without outlet flange

Z = Special version*

* If “none”, this letter is omitted.

** Not applicable for units with a straight inlet or outlet flange in the size or without a flange

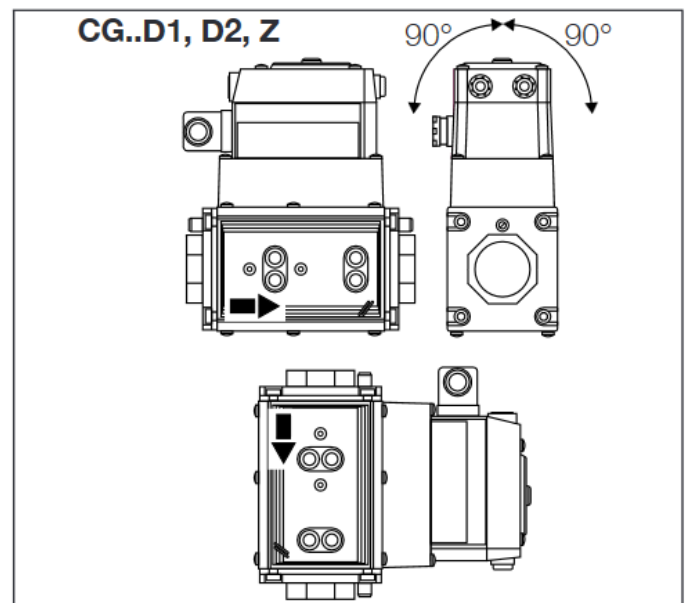
Fitting the CG

● Remove dust cap.

→ The direction of the gas flow must coincide with the arrows on the housing –

→ CG..D1, D2, Z

Into vertical pipework as desired; into horizontal pipework tilted up to max. 90° L/R, not upside down.



→ CG..G, CG..V

Into horizontal pipework only – unit may not be tilted!

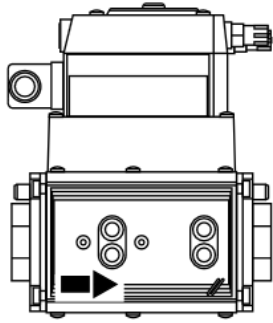
→ Keep the volume of the pipework between CG and burner small by using short pipes.

→ The housing must not touch the surrounding walls, min. distance 20 mm. After fitting, the screws for the plugs and adjusting screws must be accessible.

● Control must be fitted free of mechanical stress – use an appropriate spanner.



CG..G, V



Installing the impulse and control lines

→Connecting threads for control lines: G 1/8" in accordance with ISO 228.

- Remove dust cap.
- In the case of inlet pressures over 100 mbar: fit external gas impulse line **P_G**, distance from flange e 3 x DN – pipe 8 x 1 and screw union 8 / R1/8.

CG.. G and CG..V only:

- Fit air control line **P_L** to test point on burner.
- CG..V only:
- Fit combustion chamber control line **P_F** to test point at combustion chamber.

→If pF is not connected, do not plug the opening!

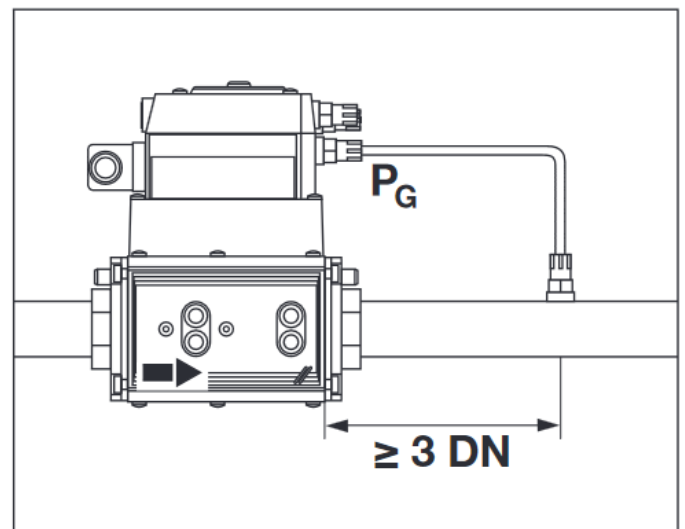
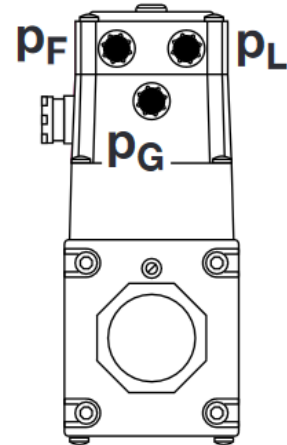
→Fit control lines so that no condensation can enter the combination control!

Suggested installation configuration:

- Select the material for the hose and pipe so as to avoid kinking, fracture and corrosion.
- Screw unions 1/8", e.g. Festo CK-1/8-PK-4, Part No. 2027.
- Flexible line made of polyurethane, inside Ø 3.9; outside Ø 6.1 e.g. Messrs. Festo, Type PU4, Part No. 6204 (blue) and Part No.

5733 (black).

→Use metallic pipe with inside Ø 6 mm for connection to combustion chamber.



Checking for tightness

- The control must be disconnected from the mains.
- Inlet:
 - Close manual valve upstream of the CG.
 - Apply max. 150 mbar to test point **A**.
 - Use soap solution to check for leaks at the ends of the pipe at the inlet and gas impulse line.
 - Open manual valve again.
- Outlet:
 - Shut off gas line at the burner using a blanking plate.



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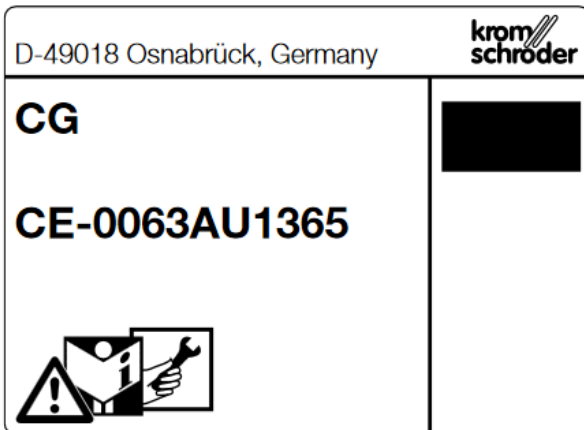
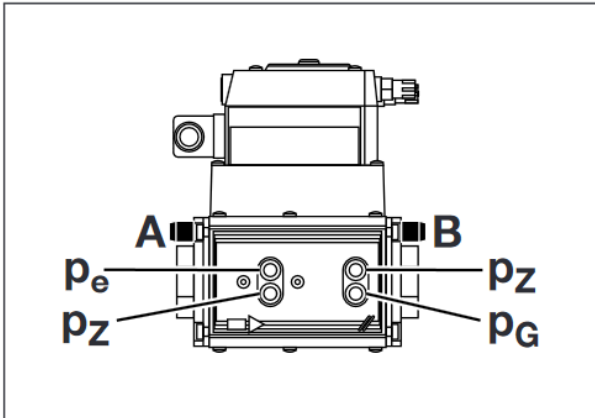
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- Apply max. 150 mbar to test point **B**.
- Use soap solution to check for leaks at the ends of the pipe at the outlet and gas impulse line.
- Remove blanking plate.



Wiring

- Via automatic burner control unit –
- The data on the type label must comply with the mains voltage (tolerance: 230 V, 120 V: +10/-15%, 24 V: ±15%).
- The system must be capable of being isolated electrically:
- Switches, fuses, wiring, ground - ing etc. must be in accordance with local regulations.
- Wire plugs one after the other so that they cannot be interchanged!
- Loosen screw.
- Remove plug.
- Take out screw fully.
- Remove plug unit with screwdriver.

- Pass cable – max. 10 mm Ø – through Pg cable gland and connect.
- Use stranded connection leads min. 0.75 mm² with wire end fer- rules.

A = Grey plug for pressure switch (optional)

1 = Break contact (optionally at customer's request)

2 = Make contact

3 = Common contact

= PE – grounding contact

B = Black plug for valves

1 = N – neutral for both valves

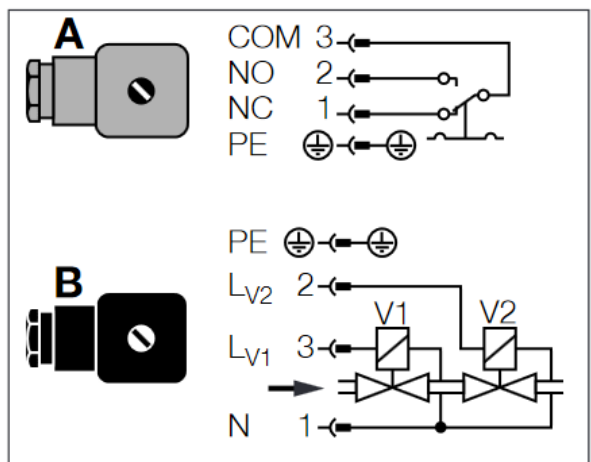
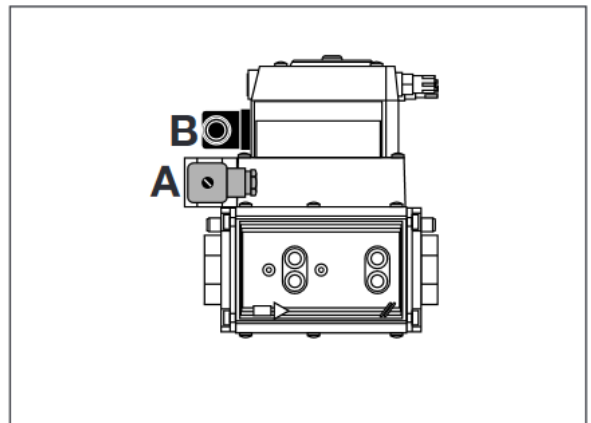
2 = L V2 – phase for valve 2

3 = L V1 – phase for valve 1

⊕ = PE – grounding contact

→When inserting the plug inserts, make sure that they are posi - tioned correctly.

The combination control is normally closed (when de-energized)!





Adjustment

After fitting, the regulator must be checked for proper functioning in conjunction with the gas consuming installation, because the pressure regulator setpoint set at the factory might not be the same as the set-point required for the gas consuming installation.

→The scale readings are approximate.

→All adjustments are to be carried out with a 2.5 mm Allen key – do not use force!

Pressure regulator CG..D1

The gas outlet pressure P_G can be set from

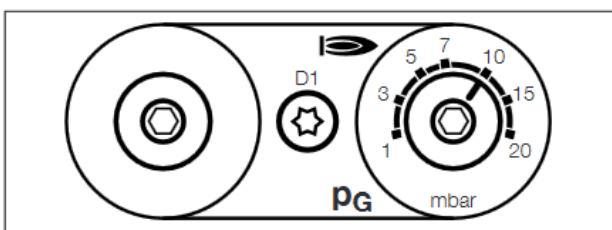
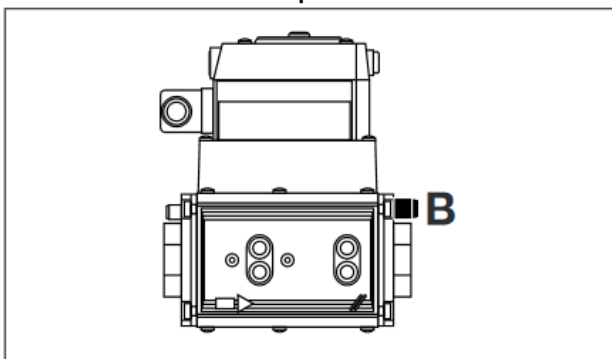
1 to 20 mbar (standard) or

4 to 50 mbar (CG..-50),

being pre-set at the factory to: $P_G = 10$ mbar.

Pre-setting:

- Measure gas pressure p_G at test point **B**.
- Set gas pressure at p_G in accordance with the burner manufacturer's specifications and flue gas analysis.
- Set pressure switch for gas (see below).
- Close off all test points.



Pressure regulator CG..D2

The start gas pressure p_S can be set from

4 to 15 mbar (standard) or

4 to 35 mbar (CG..-50).

The gas outlet pressure p_G can be set from

4 to 20 mbar (standard) or

4 to 50 mbar (CG..-50),

being pre-set at the factory to:

$P_S = 4$ mbar, $p_G = 10$ mbar.

- Measure gas outlet pressure at test point **B**.
- Set start gas pressure at p_S in accordance with the burner manufacturer's specifications – at least 4 mbar.
- Set gas pressure at p_G in accordance with the burner manufacturer's specifications and flue gas analysis.

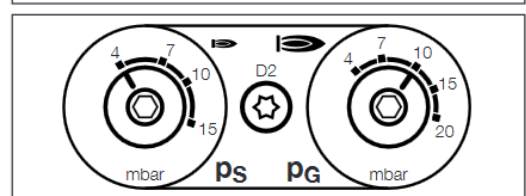
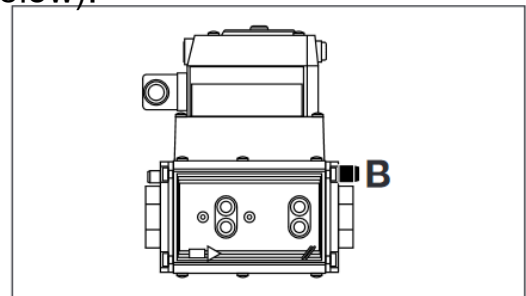
→If the burner does not start or starts too late, increase p_S .

→**Always set the start gas pressure lower than the main gas pressure!**

- Close off all test points.

→You must comply with a waiting time of at least 30 seconds between two switching operations in order to achieve reproducibility of the start gas stage.

- Set pressure switch for gas (see below).

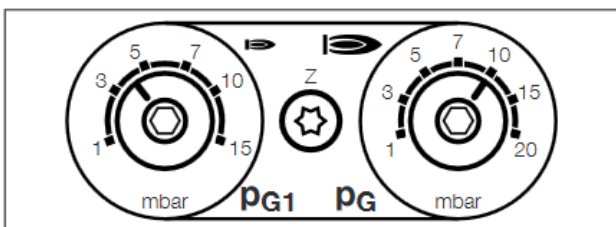
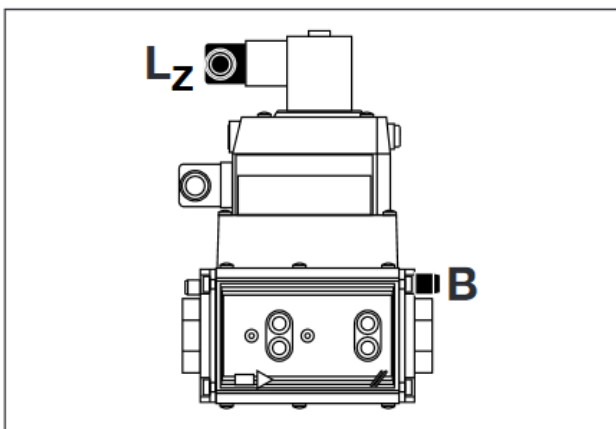




Pressure regulator CG..Z

1st stage pG1 can be set from 1 to 15 mbar (standard) or 4 to 35 mbar (CG..-50),
2nd stage pG can be set from 1 to 20 mbar (standard) or 4 to 50 mbar (CG..-50),
being pre-set at the factory to:
pG1 = 4 mbar, pG = 10 mbar.

- Measure the gas outlet pressure at test point B.
 - Set gas pressure, 1st stage, at PG1 in accordance with the burner manufacturer's specifications and flue gas analysis.
 - Apply voltage to the actuator, 2nd stage, Lz; the gas pressure increases to the 2nd stage.
 - Set the gas pressure, 2nd stage, at PG in accordance with the burner manufacturer's specifications and flue gas analysis.
 - Set the pressure switch for gas (see below).
 - Close off all test points.
- **Always set 1st stage lower than 2nd stage!**



Air/gas ratio control CG..G

The ratio between gas and air pressure is 1:1.

The air/gas ratio controls are set at the factory to: gas pressure = air control pressure.

Permitted gas outlet pressure:
pG = 0.3 to 40 mbar.

Permitted air control pressure:
pL = 0.3 to 40 mbar.

Zero offset adjustment range:
N = -1.5 to +1.5 mbar.

Important:

→ pL – pF e 0.3 mbar

→ Controller acting time for the command variable (air butterfly valve):

min. → max. > 5 s

max. → min. > 5 s

Pre-setting:

- Set zero point **N** to scale in accordance with burner manufacturer's specifications.
- Measure gas pressure PG at **B**.
- Start burner at low fire – if the burner does not start, turn **N** slightly in direction + and repeat start.
- Set the gas pressure at low fire in accordance with the burner manufacturer's specifications on the zero point control N.
- Gradually increase burner to high fire.
- Check that the gas pressure increases with the air pressure in a 1:1 ratio.
- If not, check test point PL.
- Set minimum and maximum performance on air valve – in accordance with burner manufacturer's specifications.
- Check the setting of **N** and repeat



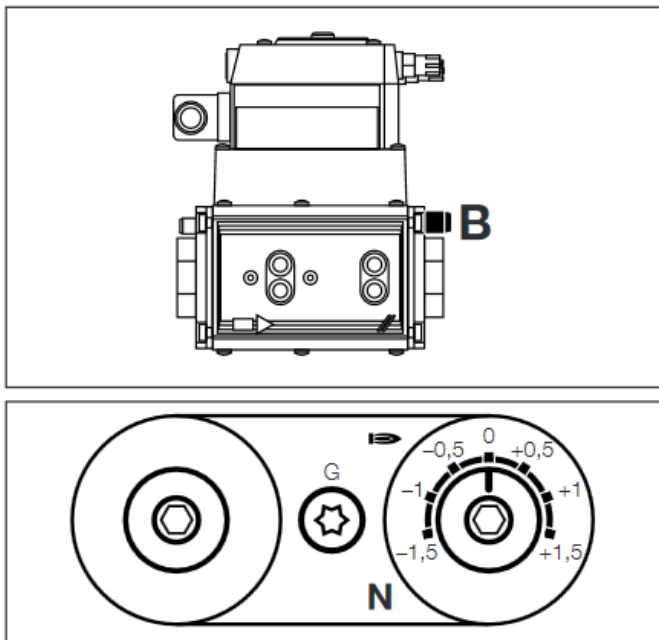
if necessary.

Fine adjustment:

- Set burner to low fire.
- Carry out flue gas analysis and set gas pressure at N to desired analysis values.

→The high fire values are automatically set by the regulator.

- Adjust pressure switch for gas (see below).
- Close off all test points.
- It is advisable to start the burner at a level higher than the minimum setting (start load) to ensure reliable flame formation.



Variable air/gas ratio control CG..V

The variable air/gas ratio control is set at the factory for:

Transmission ratio of gas to air:

$$V = 2:1.$$

Zero point $N = 0$.

Permitted gas outlet pressure:

$$p_G = 0.3 \text{ to } 40 \text{ mbar.}$$

Permitted air control pressure:

$$p_L = 0.3 \text{ to } 40 \text{ mbar.}$$

Permitted combustion chamber pressure:

$$p_F = -20 \text{ to } +20 \text{ mbar.}$$

Zero offset adjustment range:

$$N = -1.5 \text{ to } +1.5 \text{ mbar.}$$

Adjustment range for transmission ratio of gas to air:

$$V = 0.8 \text{ to } 5:1.$$

Important:

→ $p_L - p_F \leq 0.3 \text{ mbar}$

→Controller acting time for the command variable (air butterfly valve):

$$\text{min.} \rightarrow \text{max.} > 5 \text{ s}$$

$$\text{max.} \rightarrow \text{min.} > 5 \text{ s}$$

Pre-setting:

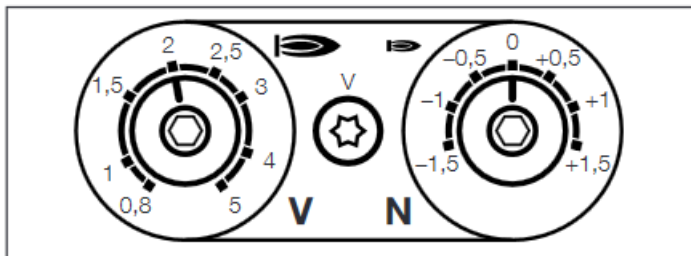
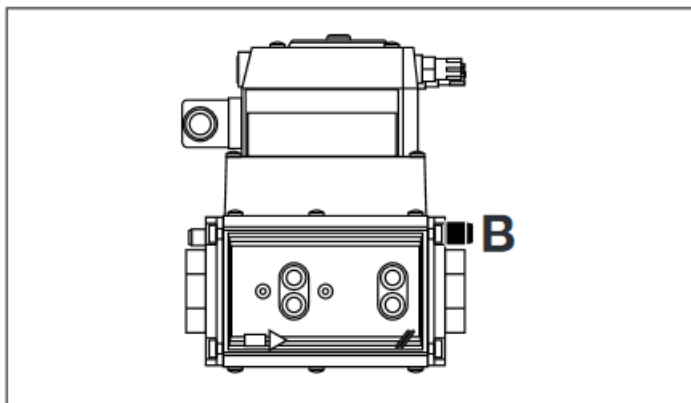
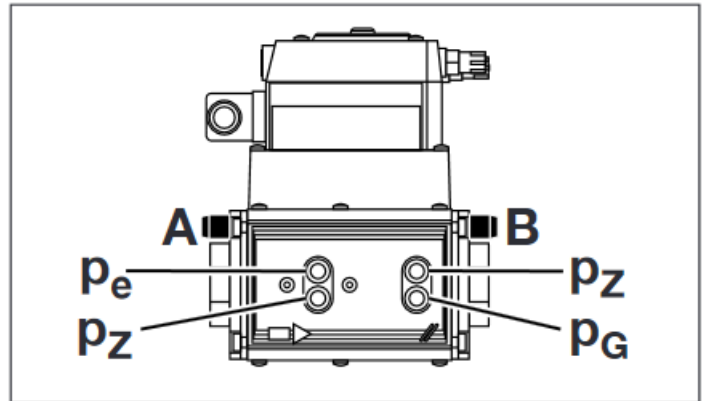
- Set transmission ratio **V** and zero point **N** to scale in accordance with burner manufacturer's specifications.
- Measure gas pressure p_G at **B**.
- Start burner on low fire – if the burner does not start, turn **N** slightly in direction + and repeat start.
- Set gas pressure at **N** at low fire in accordance with burner manufacturer's specifications.
- Gradually increase burner to high fire and set gas pressure at **V** in accordance with burner manufacturer's specifications.
- Set minimum and maximum performance on air valve – in accordance with burner manufacturer's specifications.

Fine adjustment:

- Set burner to low fire.
- Carry out flue gas analysis and set gas pressure at **N** to desired analysis values.
- Set burner to high fire and set gas pressure at **V** to desired analysis values.



- Repeat analysis at low and high fire and correct **N** and **V** if necessary.
- Set pressure switch for gas (see below).
- Close all test points – do not close connection pF if not used!
→ It is advisable to start the burner at a level higher than the minimum setting (start load) to ensure reliable flame formation.

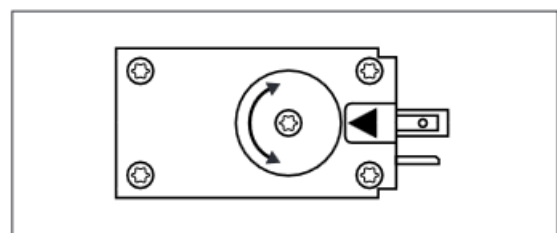
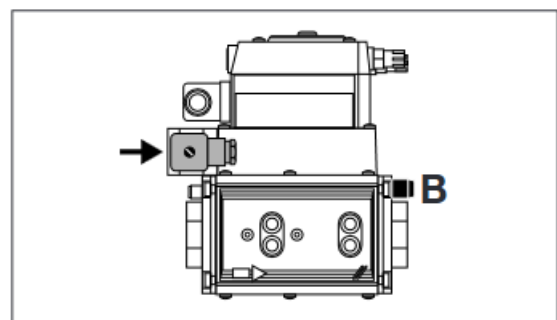


CG..WV: setting pressure switch for gas DG..VC

- With inlet-end pressure switch, pre-set at the factory to 14 mbar.
- Set burner to high fire.
- Measure gas outlet pressure at **B**.
- Slowly close manual valve up - stream of combination control until the gas outlet pressure pG drops by 2 mbar.
- Turn knob on gas pressure switch higher until the burner cuts out (= controlled shut-down).
- Open manual valve.
- The burner should restart automatically.

Testing control capacity

- Set burner to high fire.
- Measure gas pressure at **A** and **B**.
- Slowly close manual valve up - stream of the combination control until the gas inlet pressure at **A** drops by 2 mbar.
- The gas outlet pressure at **B** should not drop by more than 10%. Otherwise, the setting should be re-checked and adjusted.
- If the control capacity is insufficient, the device may not be operated.
- Open manual valve.





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The combination controls are maintenance-free

We recommend a function check
once a year

We reserve the right to make techni-
cal modifications in the interests of
progress.

If you have any technical questions
please contact your local branch of-
fice/agent. The addresses are avail -
able on the Internet or from
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