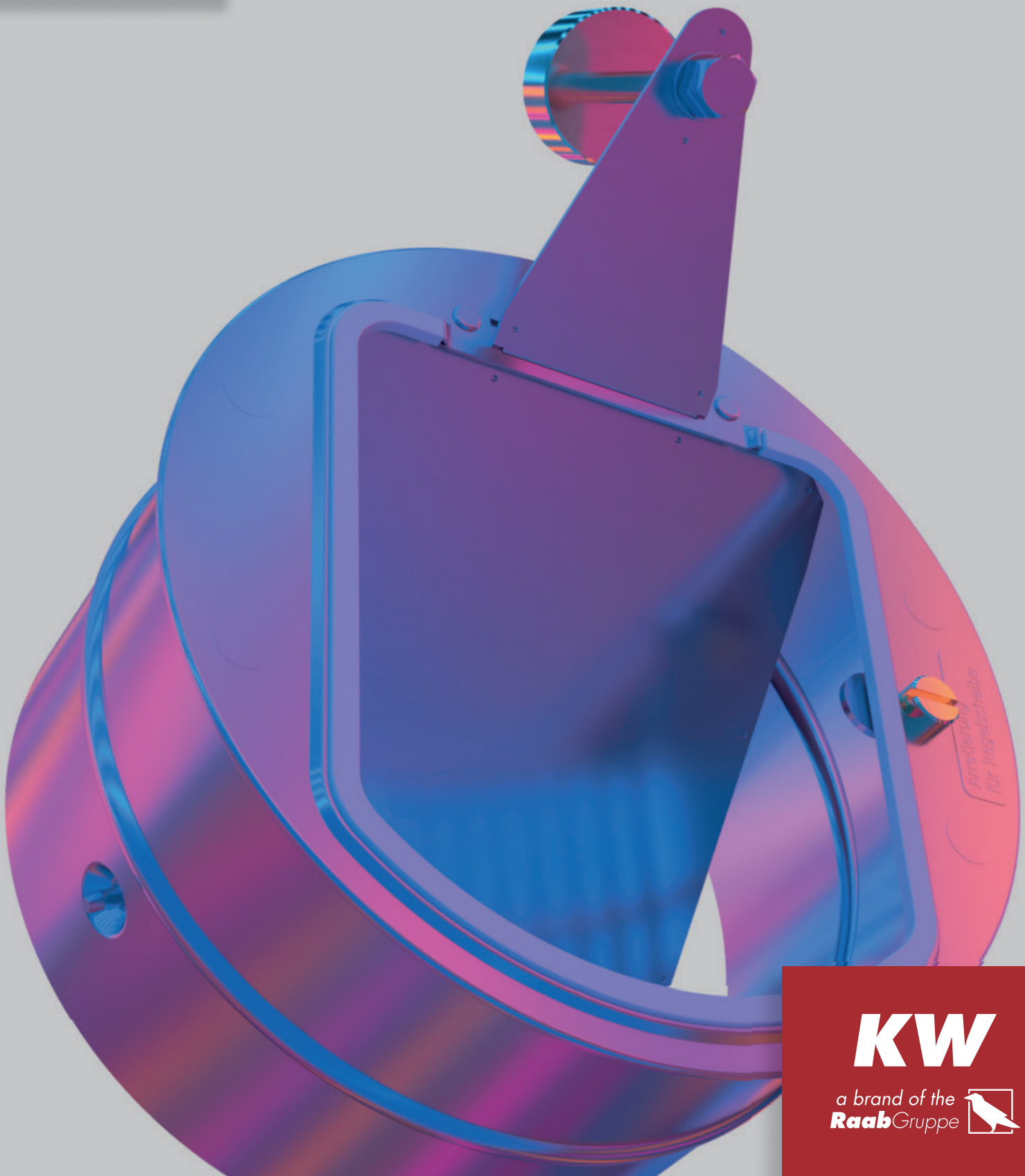
DRAUGHT REGULATORS

for an optimal combustion

PRODUCT SHEET



KW

a brand of the RaabGruppe

DRAUGHT REGULATORS

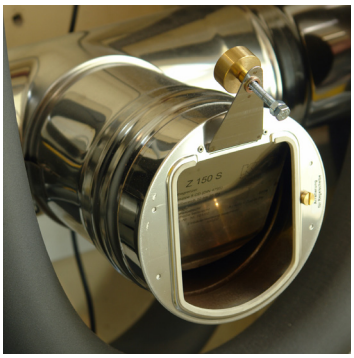
THE PRINCIPLE

The dimensioning of flue gas systems or chimneys depends on the fireplaces to be connected to them. However, the resulting performance of a flue gas system is subject to natural fluctuations due to temperature differences between the seasons and the weather. To ensure safe operation, the flue gas systems are designed for an assumed outside temperature of 15 °C (according to EN 13384). During the heating period, when the systems are mainly operated, the unfavourable temperature gradient can cause excessive negative pressure in the system. As a result, combustion will take place in an uneconomical manner. Efficiency deteriorates and energy consumption increases.

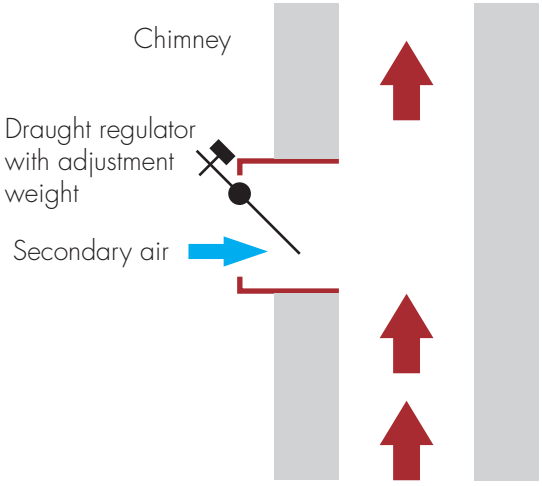
Draught regulators limit the negative pressure to the optimum value for the fireplace.

Draught regulators, also referred to as secondary air devices in DIN 4795, are mechanical components that create uniform negative pressure conditions in a flue gas system. One advantage is that draught regulators do not require auxiliary energy (electricity). Additional motors are used for forced opening during the standstill phase. As soon as the draught in the chimney exceeds the optimum value, the damper of the draught regulator opens and limits the negative pressure via the additional air volume supplied. As soon as the preset value is reached, the damper closes again. This process, which is as simple as it is effective, ensures uniform combustion and considerable energy savings. Investments in draught regulators pay for themselves after a short time due to the reduced fuel consumption and show simple ways of reducing heating costs in the private and industrial sectors. Another argument in favour of draught regulators is the reduced emission of pollutants due to the constant combustion.

Draught regulator at low negative pressure: flap closed



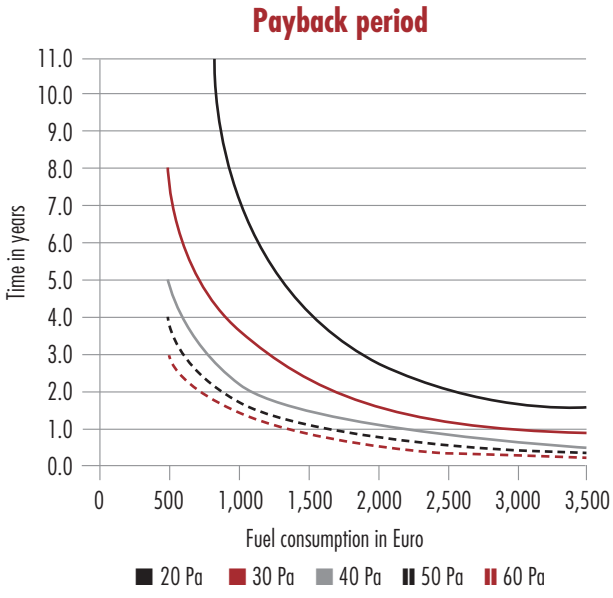
Draught regulator in case of too high negative pressure: flap open, secondary air flows in



REASONS FOR SECONDARY AIR DEVICES

Modern fireplaces place particularly high demands on the flue gas system. The specified efficiencies can only be achieved with a constant negative pressure. A standard-compliant secondary air device offers the possibility of adapting the chimney to the fireplace regardless of the operating mode. It optimises the energy balance and the emission output of the heating system. The installation of a secondary air device aims to achieve the following goals:

- ✓ Compensation of fluctuations in negative pressure due to weather conditions
- ✓ Reduction of the dew point and thus later condensate loss
- ✓ Quiet combustion
- ✓ Lower emissions
- ✓ Lower fuel consumption
- ✓ Active environmental protection with very short payback times



Payback time of draught regulators depending on fuel consumption and average negative pressure.

PRECISION DRAUGHT REGULATORS

THE PRECISION DRAUGHT REGULATORS

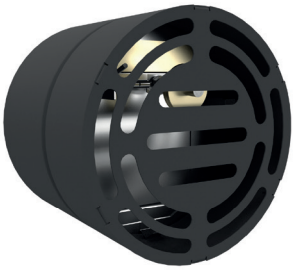
These draught regulators are characterised by the highest control accuracy. Due to the exclusive use of stainless steel, high-quality brass and structurally sophisticated solutions such as a stop damper, these secondary air devices operate extremely quietly, precisely and reliably. The special bearing of the control disc guarantees easy opening and closing and is insensitive to dirt.

The models Z 130, Z 150 (S) and Z 180 can be extended or retrofitted with a motor control to enable ventilation of the chimney during downtimes. The ZUK version of these draught regulators is also available with an overpressure flap. This safety device protects against unintentional pressure surges, as can occur when the boiler is started up or in the event of deflagration. Many boiler manufacturers prescribe this design for solid fuels.

The ZUK 250 SG is specially designed for large systems and has additional hydraulic damping of the control disc to protect it against sudden movements.

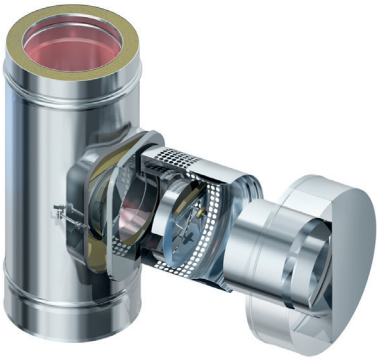
THE SOLUTION FOR WOOD-BURNING STOVES

The **DraftBox light** is a secondary air device for room-air dependent stoves with a NW 150 flue pipe connection. It can be mounted without great effort on the horizontal flue pipe socket if the upper socket is used for the stove pipe.



THE SOLUTION OUTSIDE THE BUILDING

With the **ZUK 130 DW**, Kutzner + Weber has designed the first draught regulator for outdoor use. It is attached to the lower cleaning door, which thus remains accessible for sweeping.



STANDARD DRAUGHT REGULATORS

THE BASIC SOLUTIONS FOR OPTIMISING THE FIREPLACE

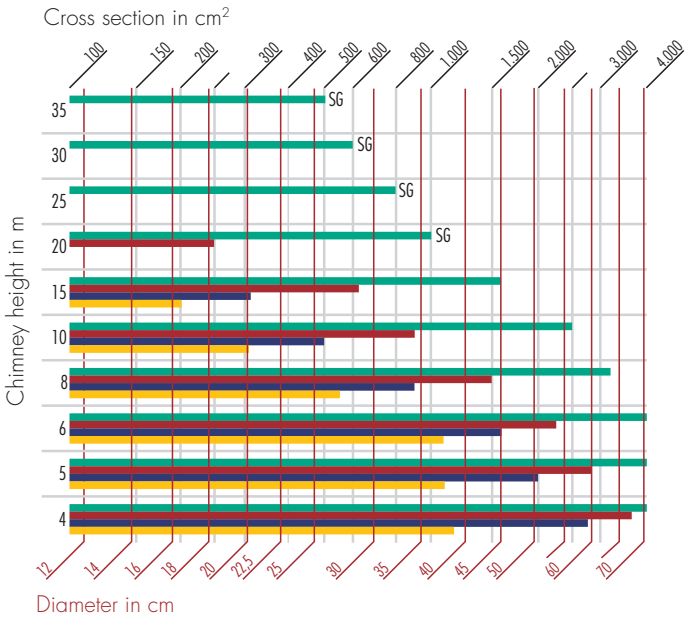
The standard models focus entirely on optimising the flue gas system and thus ensure uniform combustion. This results in energy and emission reductions.

By using stainless steel or aluminised steel (FAL) and implementing a simple mechanism without stop dampers, these models are kept attractively priced and fulfil their basic function without restriction.

However, the overpressure flap as a safety device against pressure peaks and the possibility of motor connection must be dispensed with in these models.

TECHNICAL DATA

SELECTION DIAGRAM FOR SECONDARY AIR DEVICES



	Group DIN 4795	Air flow m³/h Δp 5	Δp 20	40 Pa
Z(UK) 250 (SG)	6	220	380	525
Z(UK) 180 + 05-E	5	190	275	360
Z(UK) 150 + 012-E	4	140	220	300
Z(UK) 130 + 130 DW + DraftBox light	3	75	130	160

Example

Chimney height 10 m, chimney diameter 25 cm.
Z(UK)150, Z(UK) 180 and ZUK 250 are suitable.
Preferably use Z(UK)150 and Z(UK)180.

PROVEN EFFICIENCY

Independent study by accredited test laboratory:
"Investigation of combustion efficiency on a commercial fireplace according to DIN 13240 when using a draught regulator as well as a conventional chimney", 20.9.2019.

Emissions assessment

The study found that emissions in the areas of CnHm, NOx, CO and dust were reduced by **more than 50%**.

Results

up to **21 %** increase in combustion efficiency
up to **83 %** reduction of chimney draught
up to **45 %** prolongation of the burning time with the same fuel quantity
up to **45 %** reduction in fuel consumption

Example

	without draught regulator	with draught regulator	
Heating days per year	200 days	200 days	
Daily running time	4 h/day	4 h/day	
Annual running time	800 h/year	800 h/year	
Annual fuel consumption	6,9 Ster	4,9 Ster	2.0 Ster Fuel-savings per year
Firewood price/ster	74 €	74 €	
Firewood costs per year	511 €	363 €	148 € cost savings

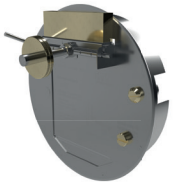
Test setup

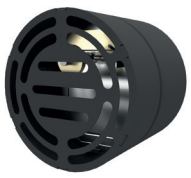
tested on a modern single room fireplace 3.0-6.1 kW


Z(UK) 250 (SG)


Z(UK) 180


Z(UK) 150 (S)


Z(UK) 130


DraftBox light


05-E


012-E


ZUK 130 DW

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