SIEMENS

7842

QGO20.000D17

QGO20.000D27

Oxygen Sensor QGO20.000...

The QGO20 is an oxygen sensor designed for acquiring the residual oxygen content of flue gases in heat generation plant burning natural gas or light fuel oil. Together with the control unit, the QGO20 monitors and controls the combustion process.

The QGO20 and this Data Sheet are intended for use by OEMs which integrate the oxygen sensor in their products.

Use

When used in connection with burner controls type LMV52 for residual oxygen control, the efficiency of combustion will be improved and oxygen emissions minimized.

The QGO20 is suited for use on all types of heat generation plant burning natural gas or light fuel oil with flue gas temperatures up to 300 °C at the point of measurement.

Supplementary documentation

Basic Documentation QGO20….....P7842

Notes

Caution!
All safety, warning and technical notes given in the Basic Documentation of the QGO20 (P7842) also apply to this document!

Standards and certificates

Note!
Only in connection with LMV52 with PLL52!

EAC Conformity mark (Eurasian Conformity mark)

China RoHS
Hazardous substances table:
http://www.siemens.com/download?A6V10883536

Only QGO20.000D17

Mechanical design

The **QGO20** consists of sensor tube with mounting flange made of stainless steel, and connecting head made of die-cast aluminium.

The **sensor tube** contains and protects the measuring cell, the cell heating element, and is resistant to aggressive substances contained in the flue gases of combustion plant burning natural gas or light fuel oil.

The sensor's **connecting head** houses a printed circuit board with the connection terminals. The cable enters through replaceable Pg11 cable glands. The cable glands can be left with the cable, thus facilitating installation and service work.

The AGO20 **flue gas collector** is one of the accessory items used with the QGO20 which is welded into the stack where the measurement shall be made, also serving as a mounting flange and flue gas guidance.

Type summary

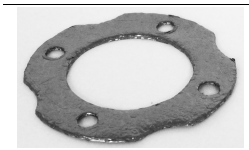
	Article no.	Type	Mains voltage
	**BPZ:QGO20.000D17**	**QGO20.000D17**	AC 120 V
	**BPZ:QGO20.000D27**	**QGO20.000D27**	AC 230 V

Accessories (must be ordered separately)

Control unit for measurement and control of the residual oxygen with PLL52
Refer to Basic Documentation P7550 **LMV52**

O2 module CAN bus module for O2 trim control with LMV52
See Basic Documentation P7550 **PLL52**

Flue gas collectors	Type	Article no.
• For chimney diameters up to 400 mm	**AGO20.001A**	**BZP:AGO20.001A**
• For chimney diameters above 400 mm	**AGO20.002A**	**BZP:AGO20.002A**



Flange gasket for service	Type	Article no.
	428021170	**BZP:428021170**

Display and operating unit **AZL52**
See User Documentation A7550

Technical data

QGO20

Mains voltage for heating the measuring cell	
• QGO20.000D27	AC 230 V ±15%
• QGO20.000D17	AC 120 V ±15% (only with LMV52 and PLL52)
Mains frequency	50...60 Hz ±6%
Power consumption	Max. 90 W, typically 35 W (controlled)
Perm. mounting position	Refer to chapter *Mounting instructions*
Degree of protection	IP40 (to be ensured through mounting)
Weight	Approx. 0.9 kg
Signal lines	
• Shielded 6-core cable	Twisted pairs
• Shielding connected to terminal GND of the PLL52	
• Proposal for cable	LifYCY3x2x0.2 or LYCY3x2x0.2
Measuring principle	Zirconium dioxide measuring cell as an oxygen ion conductor
Perm. flow rate of flue gas (only with the AGO20)	1...10 m/s
Perm. types of fuel	Light fuel oil (EL), natural gas (H)
Measuring range	0.2...20.9% O_2
Perm. cable length	Max. 100 m
Recommended cable length	<10 m
Power supply lines (mains cable)	
• Wire dia.	Min. 1 mm²
• Cable type	
QGO20.000D27	e.g. NYM 3 x 1.5
QGO20.000D17	UL AWM Style 1015/MTW or CSA-AWM/TEW
Required operating temperature of measuring cell	700 °C ±50 °C

Environmental conditions

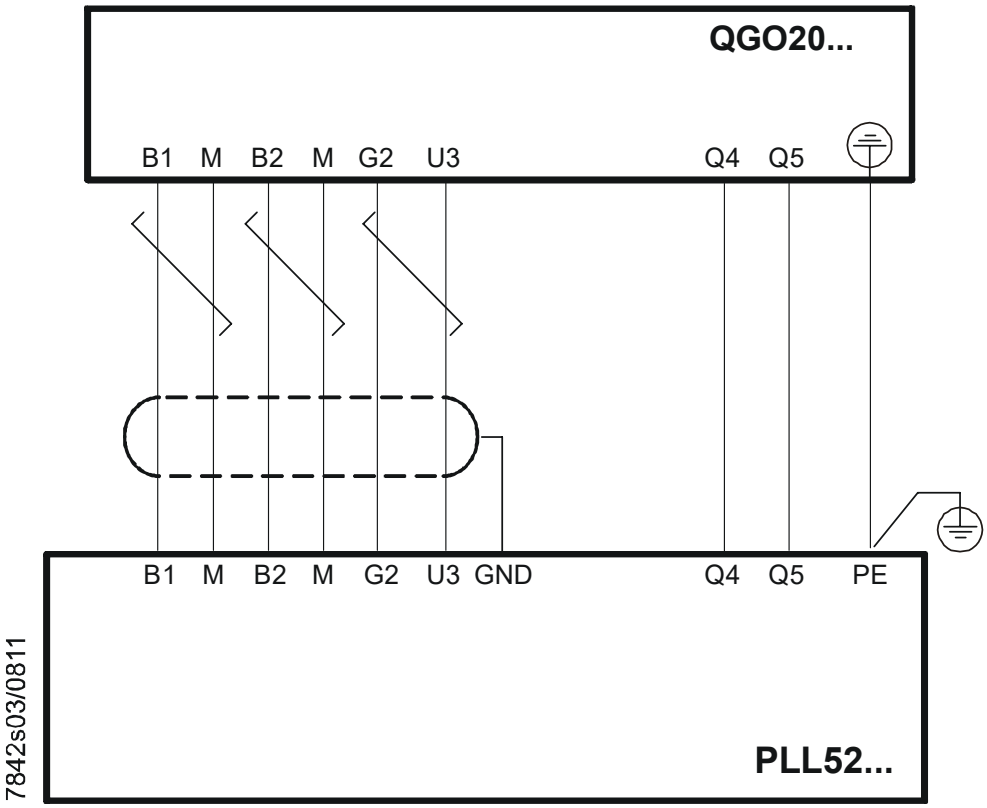
Storage	
Temperature range	-20...+60 °C
Humidity	<95% r.h.
Transport	
Temperature range	-25...+70 °C
Humidity	<95% r.h.
Operation	
Temperature range	
• Flange	Max. 250 °C
• Connecting head	Max. 70 °C
• Flue gas	≤300 °C
Humidity	<95% r.h.
Installation altitude	Max. 2,000 m above sea level

Attention!
Condensation, formation of ice and ingress of water are not permitted!

AGO20

Tube	DN50, steel X5 CrNi 18 9
Tube length	
• For the AGO20.001A	180 mm
• For the AGO20.002A	260 mm
Flange	DN50, steel X5 CrNi 18 9

Connection diagram



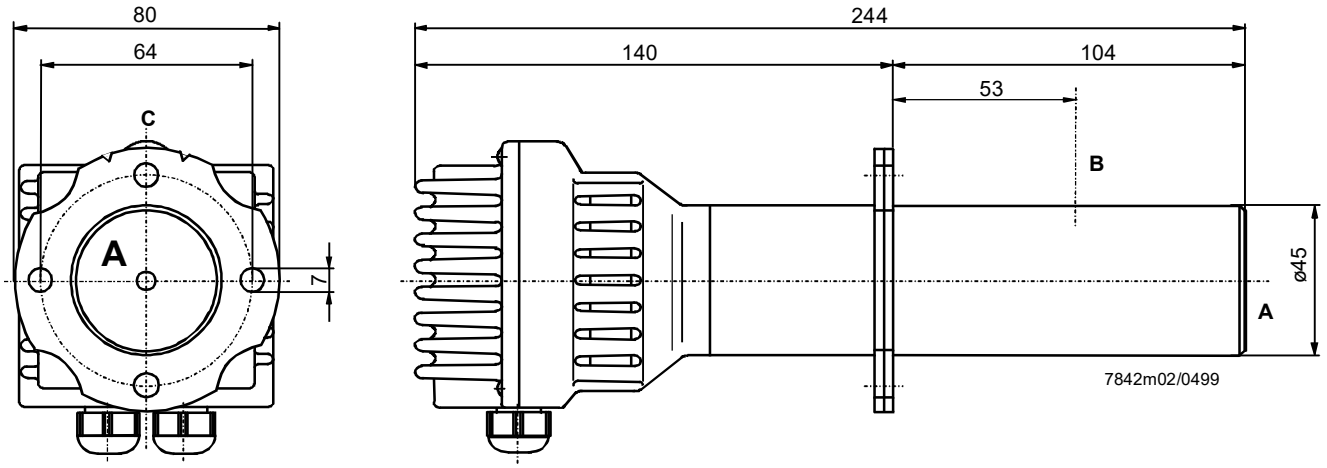
Legend

B1	(+)	Signal of oxygen measuring cell
B2	(+)	Thermocouple voltage
G2	(-)	Power supply temperature compensation element
GND		Electrical ground for shielding
M	(-)	Electrical ground for signals *B1* and *B2*
Q4		Sensor heating with mains connection
Q5		Sensor heating with mains connection
U3	(+)	Signal of temperature compensation element
⏚		Protective earth (PE)

Dimensions

Dimensions in mm

QGO20.000D27



Legend

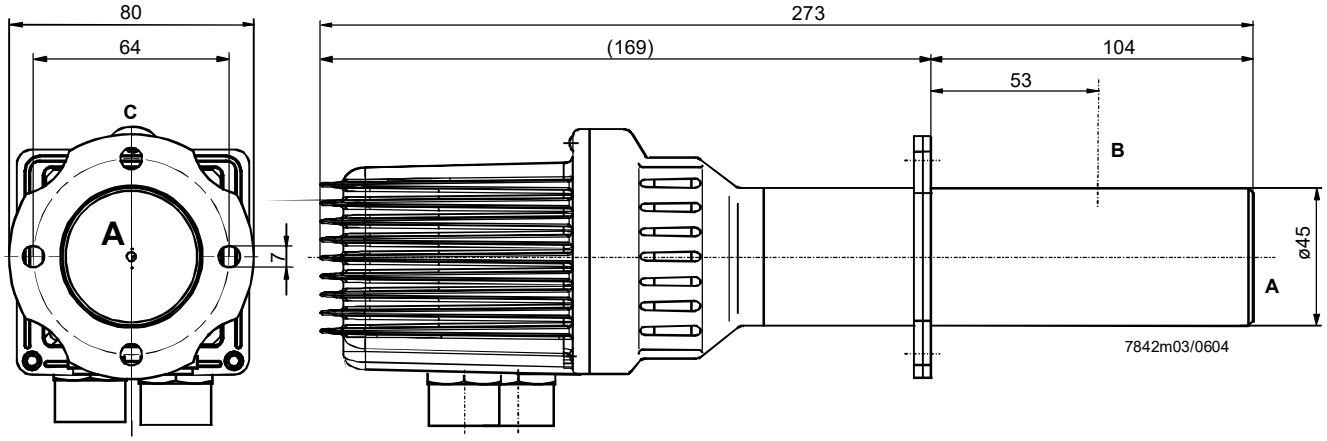
A Flue gas inlet

B Flue gas outlet

C Notch on the flange marking the flue gas outlet side

Flange gasket (included)!

QGO20.000D17



Legend

A Flue gas inlet

B Flue gas outlet

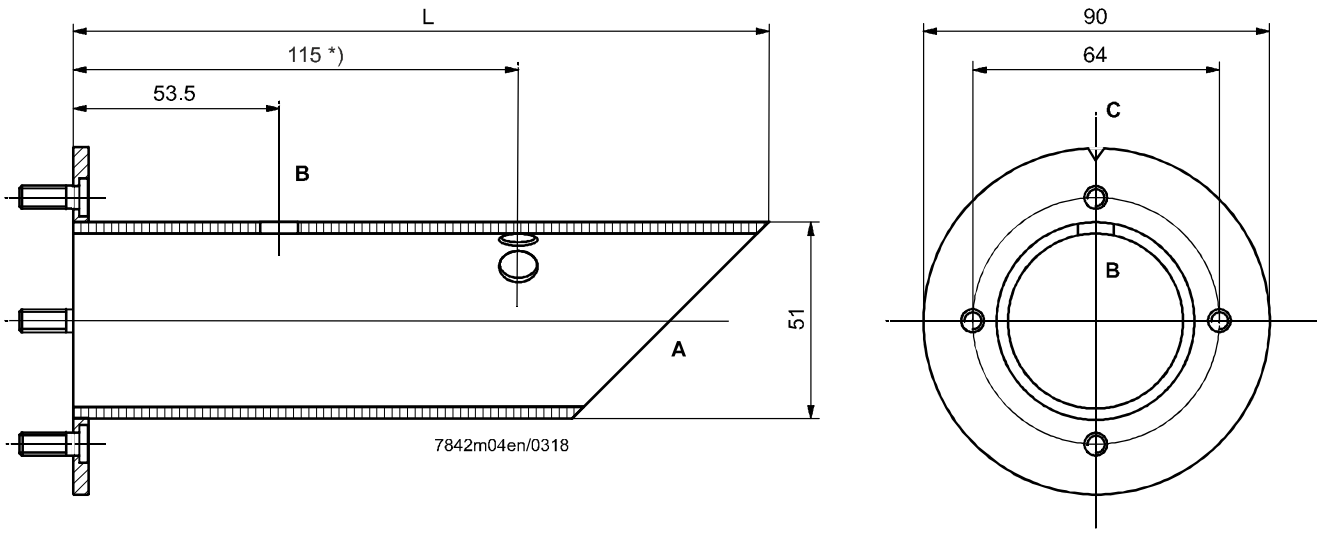
C Notch on the flange marking the flue gas outlet side

Flange gasket (included)!

Dimensions (cont'd)

Dimensions in mm

AGO20



Legend

A Flue gas inlet
B Flue gas outlet
C Notch on the flange marking the flue gas outlet side
L 180 mm for the AGO20.001A
260 mm for the AGO20.002A
*) Hole only present in AGO20.002A

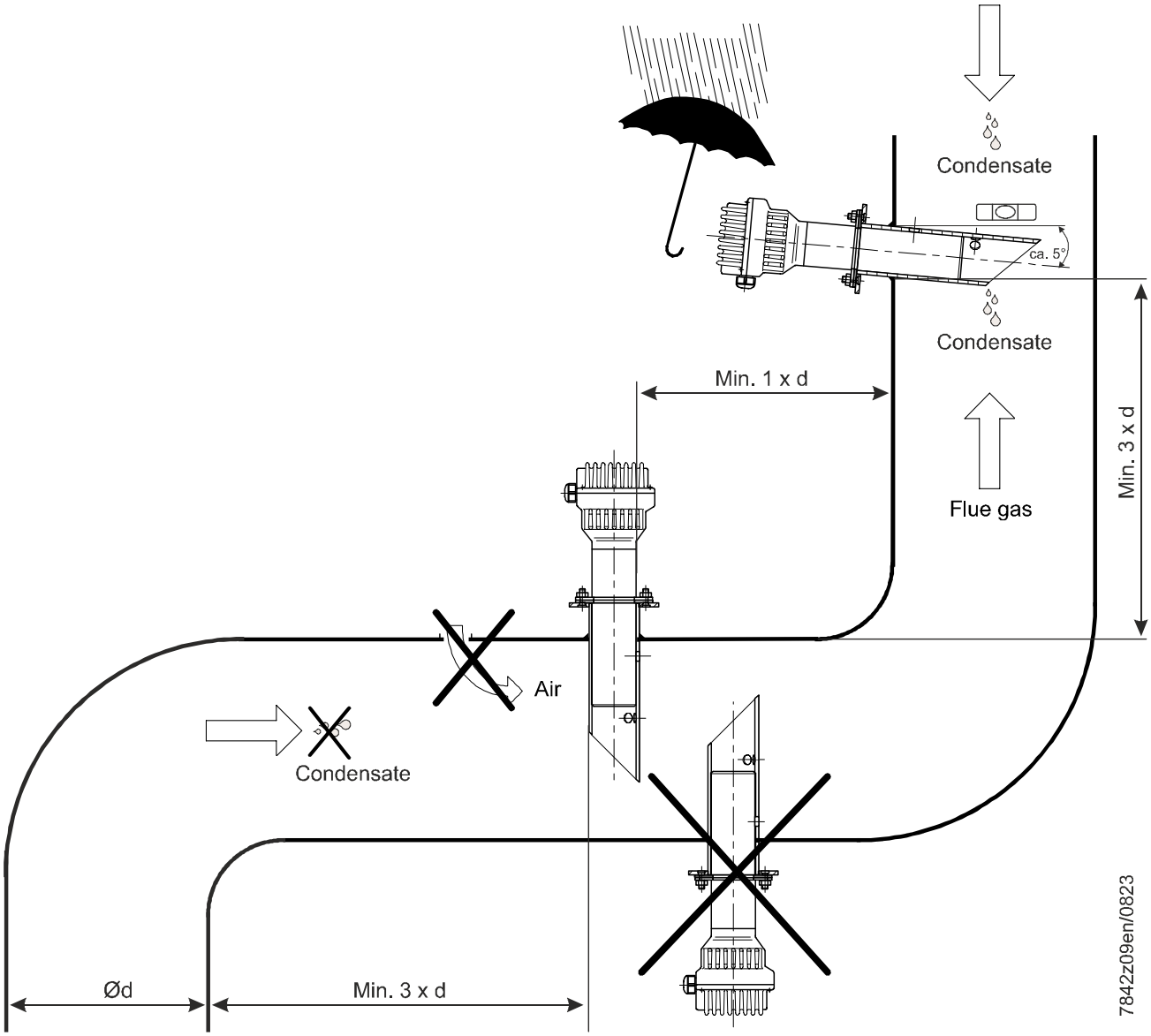
Flange gasket (included)!

Ceramic sensor – fragile

QGO20 O2 sensor and AGO20 flue gas collector

Prerequisites for accurate measurement of the O2 content in flue gases:

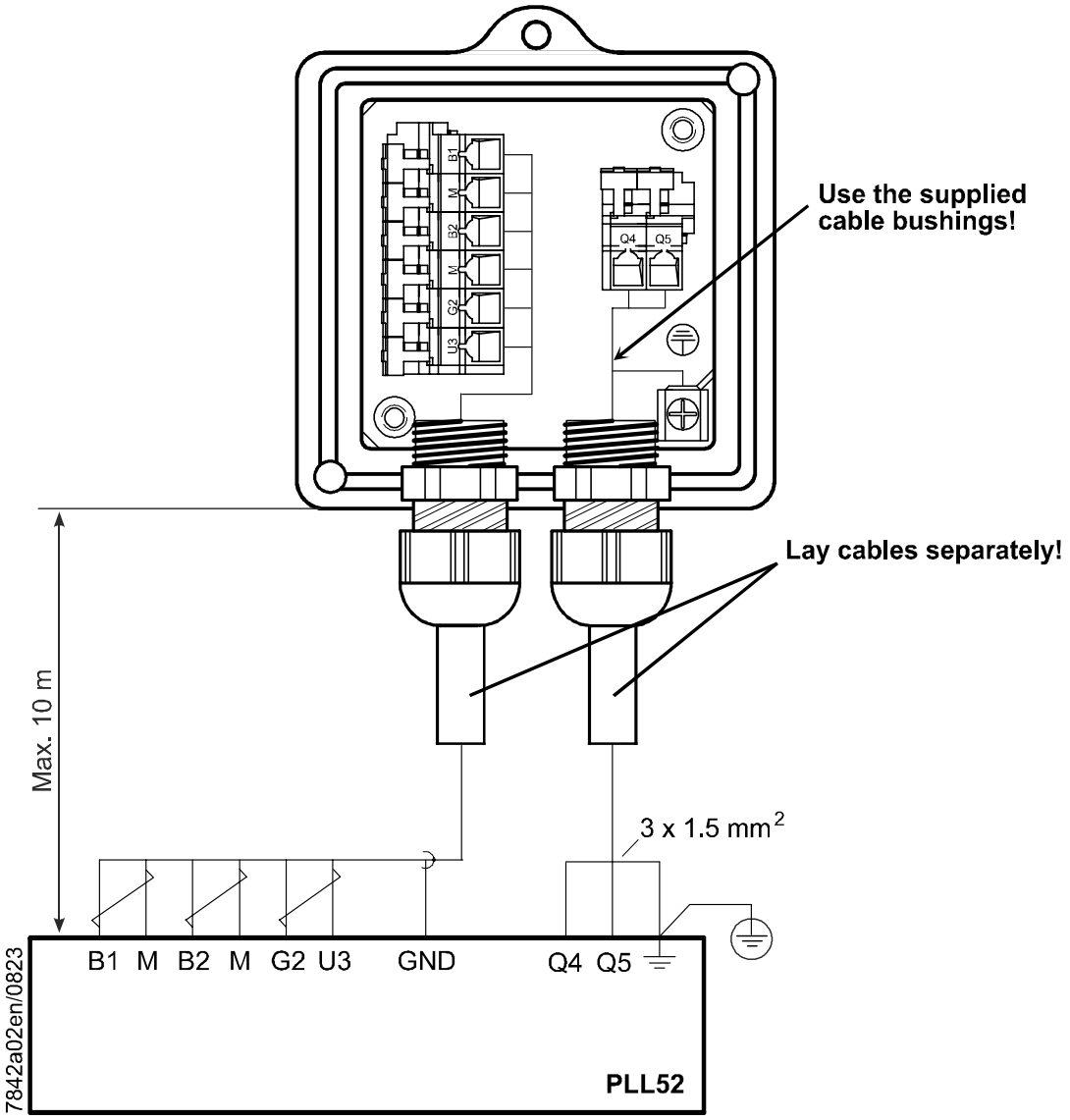
- Only use the QGO20 with the AGO20 flue gas collector
- Install the QGO20 as close to the burner as possible, in an area free from turbulence and irregularities. Do not mount directly in the vicinity of dampers or bends
- No air must be allowed to reach the flue gases between the burner and the sensor
- Flow velocity 1…10 m/s. Flue gas temperature at measuring point <300°C



Connection diagram

Shielded 6-core cable. Cores twisted in pairs if possible. Shielding connected to the GND terminal of the PLL52. Do not connect the shielding to protective earth or „M“!

Connecting cable, e.g.: LifYCY 3 x 2 x 0.2 or LYCY 3 x 2 x 0.2



Key

B1 (+)	O2 measuring cell signal	3 x 1.5 mm:	
B2 (+)	Thermal element voltage	Q4	QGO20 sensor heating (120 V AC / 230 V AC)
G2 (-)	Power supply for temperature compensation element	Q5	QGO20 sensor heating (120 V AC / 230 V AC)
GND	Ground for shielding		
M (-)	Ground [M (-)] for B1, B2	**Earth***	
U3 (+)	Signal from temperature compensation element		

Please note!
Caution with the U3 and G2 terminals!
Miswiring of the terminals will cause the compensation element to fail.

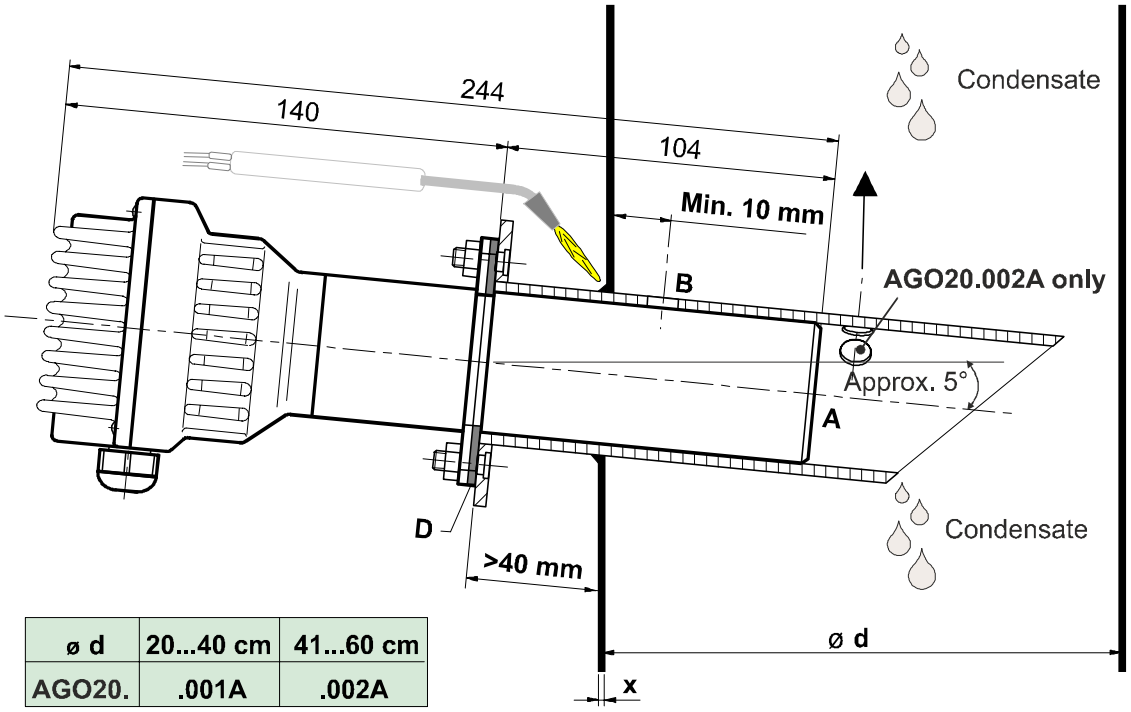
*** Only 1 earth conductor terminal is available on the PLL52. Both earth conductors must be routed to one terminal.**

Notes for installation and commissioning

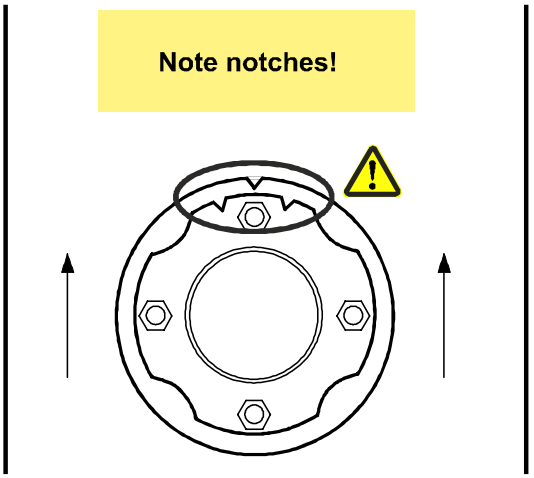
- The distance between the flueway wall and flue gas outlet (B) of the AGO20 must be at least 10 mm
- The flue insulation must not protrude beyond the connecting flange, as this could isolate the sensor head (thermal overload). The sensor head must remain free. Avoid radiant heat – e.g., through heat conduction plates
- When commissioning for the first time, switch on the measuring system approx. 2 hours before use. In the case of brief plant shutdowns (1–2 days) it is recommended to leave the measuring system (QGO20 and PLL52) running
- The sensor may provide incorrect measurements during the heating-up process

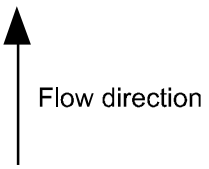
Please note!

- **Never use the QGO20 in the flue when it is cold and the burner is running**
- **After replacing the sensor, check the sensor heating control**
- **Voltage at Q4 – Q5 must pulse every 2 seconds**
- **Switch off immediately if voltage does not pulse**
  → Replace PLL52



ø d	20...40 cm	41...60 cm
AGO20.	.001A	.002A





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