

Service bulletin

Measuring and adjusting CO₂



BOSCH

Introduction

NOTE: The CO₂ levels can only be adjusted by a certified gas technician with a calibrated combustion gas analyzer.

Tools needed:

- ▶ Combustion gas analyzer
- ▶ Flat head screw driver
- ▶ Philips head screw driver

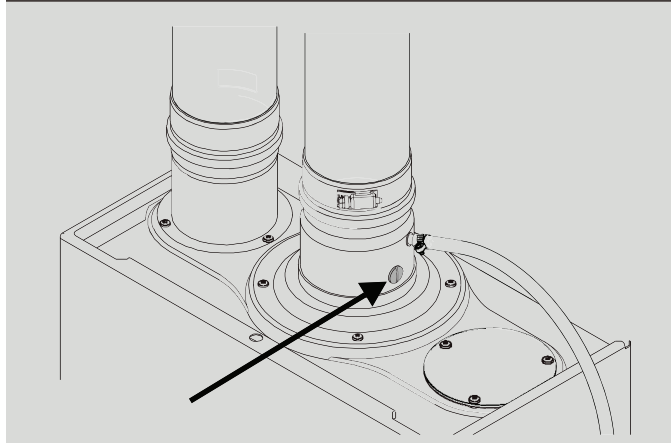
Measure gas pressure

- ▶ One factor that may affect CO₂ levels is improper gas pressure. Please see bulletin TWH-G2-03 for the procedure to measure gas pressure. Correct any deficiencies in gas pressure before proceeding.

Preparation

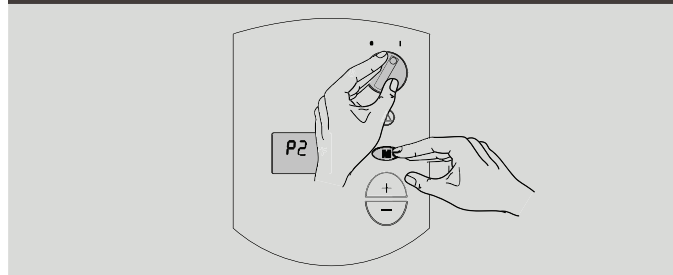
1. Turn ON/OFF switch to the OFF (O) position.
2. Remove brass flat head screw on the exhaust collar as seen below.

Measuring port



3. Insert CO₂ analyzer probe into the measuring port. The tip of the probe should be in the center of the flue pipe (approx 1.5" inserted).
4. While holding the Program (M) button, move the ON/OFF switch to ON (I) position. As soon as '188' flashes on the display, release the program button. The display should now read P2.

Program mode



Measuring CO₂

1. Open hot water taps to achieve a flow rate of at least 4 gallons per minute. (1 tub and 2 sinks should be sufficient)
2. Record the P2 CO₂ reading below. (Analyzer reading may take several minutes to stabilize)
P2 CO₂ reading: % CO₂
3. Press the '+' button until P1 appears. Unit will ramp up to high fire and the water flow should increase.
4. Record the P1 CO₂ reading below.
P1 CO₂ reading: % CO₂
5. Compare your readings to those found in the following table. If CO₂ readings are off make adjustments as outlined in the next section.

Proper CO₂ readings

| | Natural Gas | LP Gas |
|--------------|-------------|--------------|
| Max input P1 | 9.7 ± 0.3 % | 10.7 ± 0.3 % |
| Max input P2 | 9.5 ± 0.5 % | 10.5 ± 0.5 % |

Adjusting CO₂

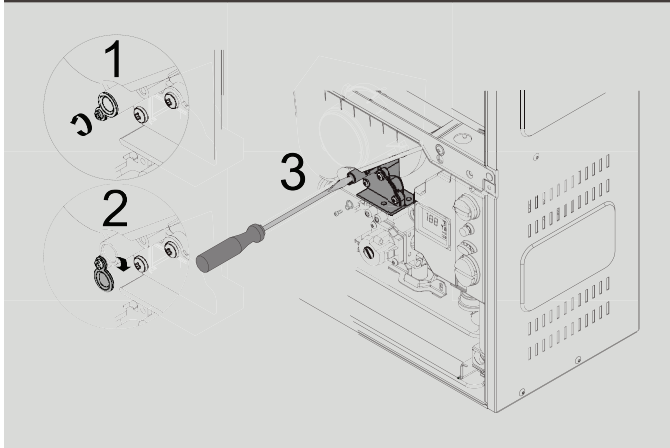
NOTE: When making adjustments with the front cover off, CO₂ levels will be 0.3 - 0.5 % lower than with the front cover on. Make final readings with the front cover installed.

NOTE: Adjusting P1 CO₂ levels will change the P2 CO₂ levels. Confirm the P1 value BEFORE adjusting the P2 level.

Adjusting P1 CO₂ level

1. Loosen yellow painted Philips screw and cover should rotate down revealing a brass slotted screw.

Adjusting P1 CO₂ level

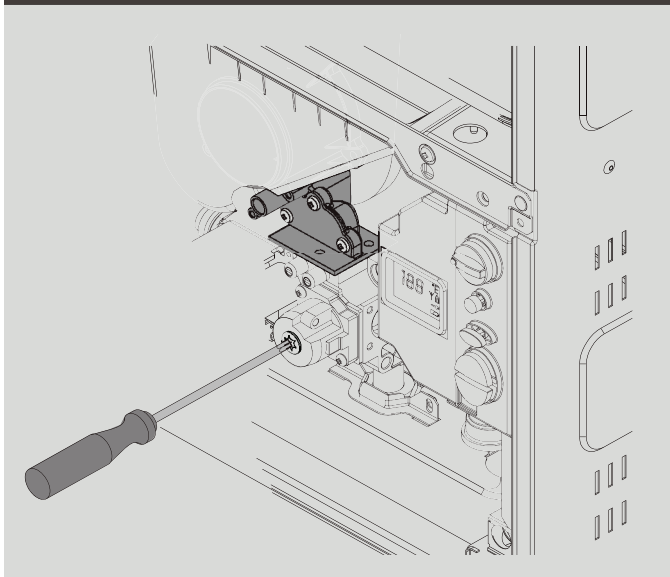


2. Adjusting the brass slotted screw counter-clockwise will raise P1 CO₂ levels and clockwise will lower P1 CO₂ levels.

Adjusting P2 CO₂ level

1. Remove yellow painted #40 Torx cover from the front of the gas valve. A plastic #40 Torx screw will be revealed.

Adjusting P2 CO₂ level



2. Adjusting the plastic #40 Torx screw counter-clockwise will lower P2 CO₂ levels and clockwise will raise P2 CO₂ levels.

NOTE: These screw adjustments are very sensitive and may take several minutes to stabilize.

Final readings

1. Verify both P1 and P2 are within the ranges specified in the table below. Continue adjusting the P1 and P2 levels as necessary until CO₂ values are within the specified ranges.

Proper CO₂ readings

| | Natural Gas | LP Gas |
|--------------|-------------|--------------|
| Max input P1 | 9.7 ± 0.3 % | 10.7 ± 0.3 % |
| Min input P2 | 9.5 ± 0.5 % | 10.5 ± 0.5 % |

2. As a safety precaution, verify the Carbon Monoxide (CO) readings on P1. CO levels should not exceed 300ppm (follow local codes if more restrictive). If values exceed this limit, inspect vent system and fincoils on the heat exchanger for blockage. To access heat exchanger fincoil, refer to service bulletin TWH-G2-22.

Proper CO readings

| | Natural Gas | LP Gas |
|--------------|-------------|--------|
| Max input P1 | 300ppm | 300ppm |

Returning to Service

1. Return slotted cover to original position.
2. Reinstall Torx cover.
3. Remove CO₂ analyzer probe and reinstall brass flathead screw in exhaust collar.
4. Turn ON/OFF switch to the OFF (O) position and then back to the ON (I) position.
5. Heater is ready for normal operation.

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