OZONE GENERATOR BMT 803N

Rev. 12/2010

Safety Precautions:

WARNING: Ozone is a highly toxic gas. The concentrations produced by this generator are above the lethal limit. Appropriate safety devices (e.g. ozone detectors) should be used. In case of an ozone leak electrical energy and oxygen supply to the generator must be cut off immediately.

WARNING: In order to avoid leaks the oxygen supply pressure must never, not even momentarily, exceed the max. pressure written on the front panel. An oxygen-enriched atmosphere always means an increased fire hazard! Follow recommended oxygen handling practice. In ozone systems, always use appropriate means (e.g. safety relief-valves, oxygen sensors) to insure avoidance of overpressures and the risks associated with oxygen.

WARNING: This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker minimum 3 A (Slow Blow) and not larger than 15 A at 115 VAC (10 A at 230 VAC) is used on the phase conductor.

CAUTION: Water should never be allowed to enter the generator. The internal circuitry may be damaged.

CAUTION: Do not run this generator in a humid, dusty or corrosive environment. Internal circuitry may be damaged.

CAUTION: The ambient temperature may not exceed 40°C. Air flow of the fan and through the openings may not be blocked. If the generator is installed in a larger system where temperature could exceed 40°C, temperature controlled automatic cut off of electrical energy and oxygen supply must be used. Due to the limited life of fans generators must be returned for service after 35,000 hours of operation.

General Description

The OZONE GENERATOR BMT 803N is a small air-cooled plate ozone generator for pure oxygen as the feed gas. The dielectric is plain ceramic. The discharge electrodes are tungsten.

The enclosure of the instrument is an aluminum extrusion profile which acts as a large heat sink. Additionally a fan is mounted externally.

Dimensions of the generator are approx. 391 x 170 x 132 mm, a bit bigger than a shoe box. The weight is approx. 6.5 kg. Input voltage is 230 VAC (115 VAC on request). Standard inlet and outlet fittings are for 3 x 5 mm PTFE tubing. Maximal power consumption is about 160 W, including 20 W for the fan. The operating pressure must not exceed 1 bar gauge. At 0.5 bar gauge (1.5 bars abs), 100 g/Nm^3, 20°C ambient air temperature, the ozone production is typically 8 g/h. Maximally obtainable ozone concentration exceeds 250 g/Nm^3.

For higher pressure applications the model BMT 803N HP is available which is optimised for operation at 2 bar gauge. The ozone production of this version is typically 9 g/h.

Power setting is with a 10-turn potentiometer mounted on the front panel. Control range is approximately 1:7. As an option (option RC) power setting is via an external DC voltage 0 to 5 V, or a remote potentiometer (see "Remote Control Capabilities").

The option RCS additionally offers a safety measure: Ozone generation is active only as long as an external 24 VDC control voltage is applied. When this control voltage is removed ozone generation is interrupted (see "Remote Control Capabilities").

The ozone production decreases with increasing ambient air temperature. The higher the ozone concentration, the greater the effect.

After 35,000 hours of operation the generator has to be serviced.

The ozone generator has to be installed together with an external pressure regulator in front of the oxygen inlet, and a throttle valve at the ozone gas outlet. Fittings are for PTFE tubing 3x5 mm (ID=3, OD=5), or FEP tubing 1/8" x 3/16". ¼" VCR (both, inlet and outlet, male body) and ¼" Swagelok (inlet and outlet) are available upon request.

Remote Control Capabilities (OPTION)

The standard instruments come with a 10-turn-potentiometer at the front panel to set the electric power applied to the ozone generation process (ozone generation power). In the CCW end position of the potentiometer electric power is about 15%, in the CW position power is 100%. The potentiometer setting is non-linearly related to the electric power.

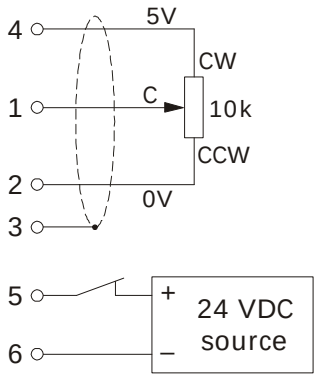
Option RC:

Optionally the instruments can be ordered with a 6 pin Remote Control connector (green) instead of the potentiometer.

The electric ozone generation power can be controlled by a DC voltage (0 VDC to 5 VDC) between pin 1 and pin 2 (see schematic). Or it can be controlled with a remote 10 kΩ potentiometer. This potentiometer can be connected between pin 4 and pin 2 (Attention: a shield has to be used, connected to pin 3). Pins 5 and 6 are not connected with option RC.

Option RCS:

The two other pins (pin 5 and pin 6) are internally connected for remote switching on and off the electric ozone generation power by an external 24 VDC voltage (only 6 mA are necessary for control). Ozone generation is on when the DC voltage is applied between pin 5 and pin 6. When the DC voltage is off, ozone generation is stopped completely. Attention: 24 VDC is needed to operate a generator with RCS option!



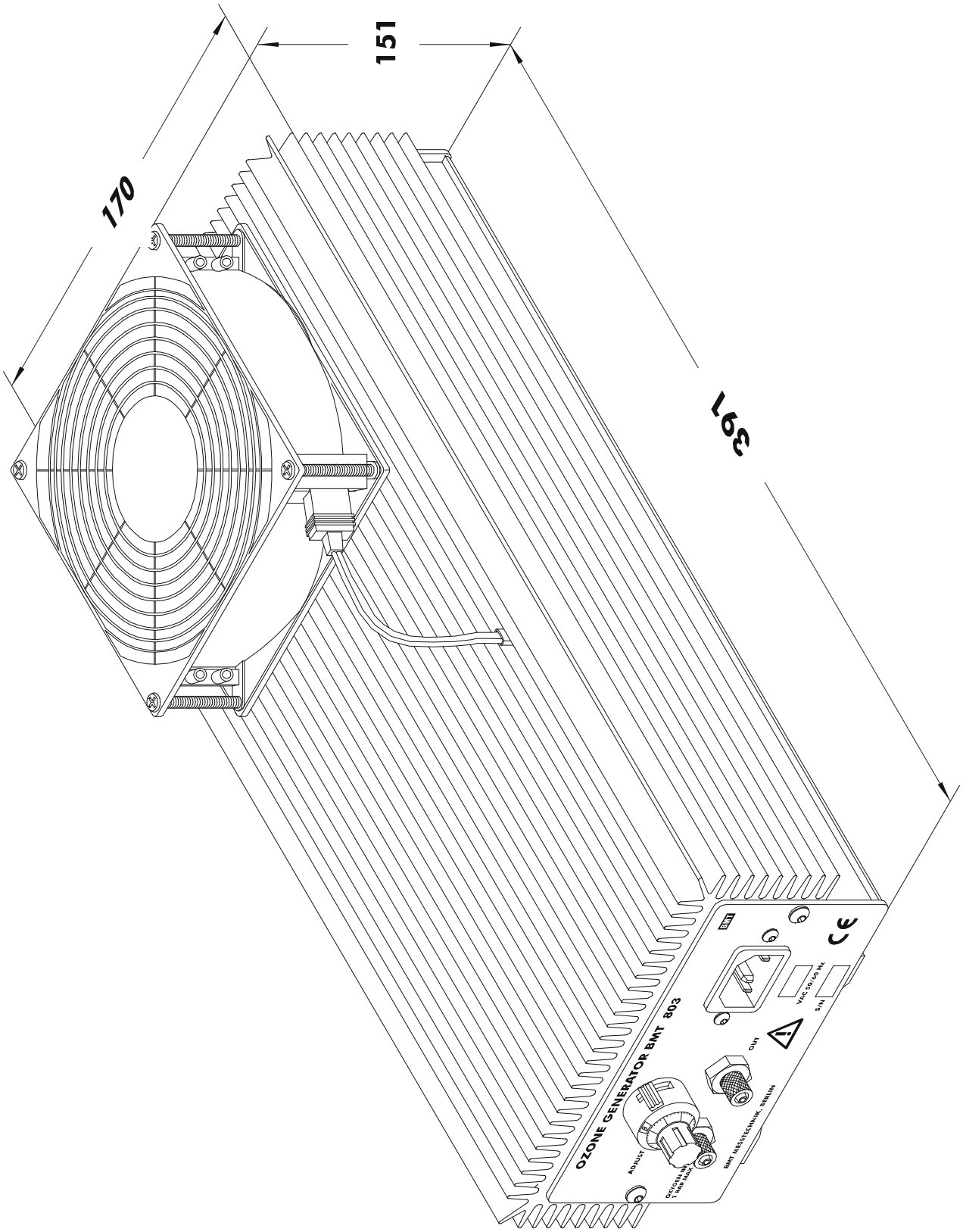
The following table shows the pinout of the front panel connector on the BMT 803 N:

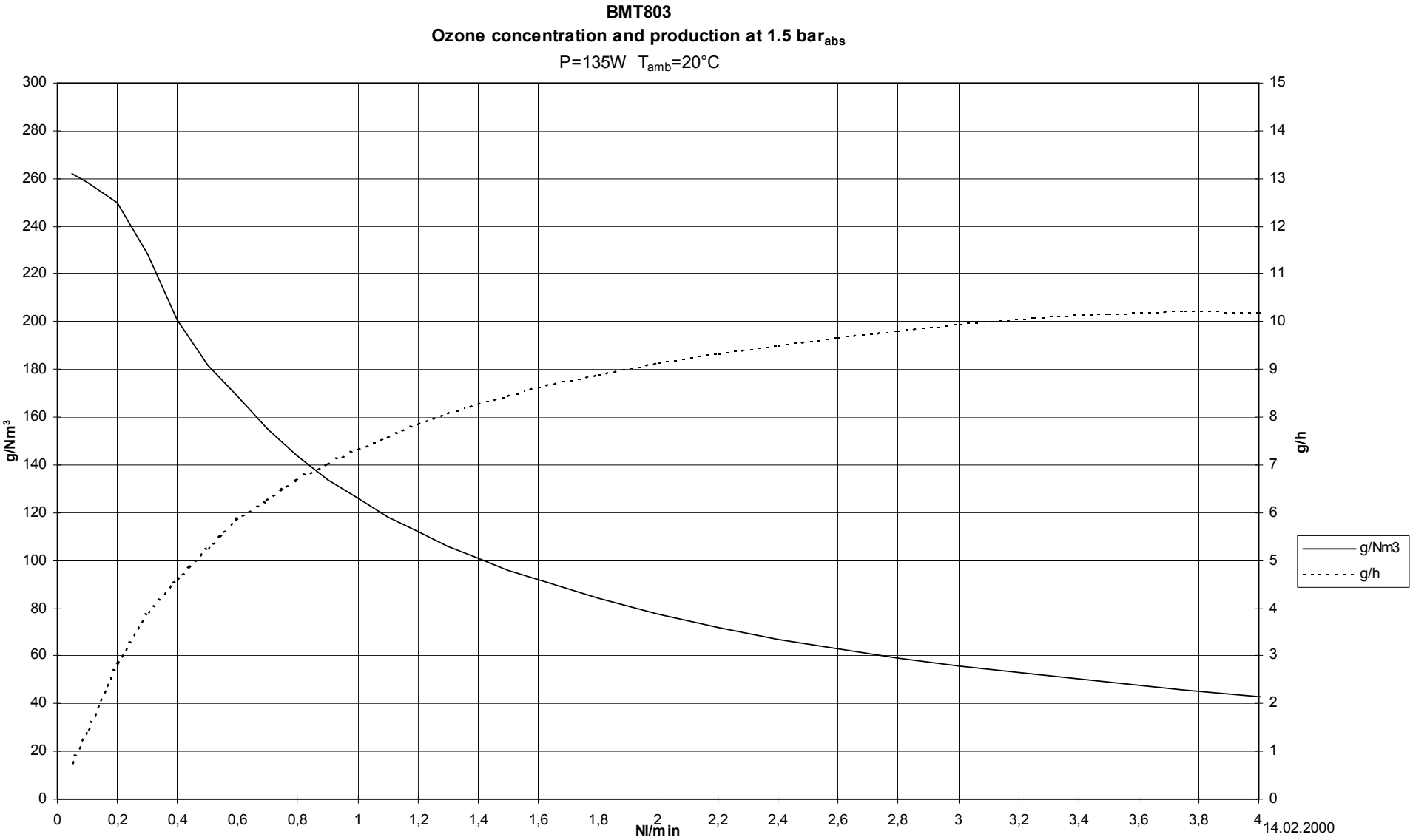
Pin Number	Function	
1	Remote Control (0-5 V), or Potentiometer C	
2	Remote Control Ground, or Potentiometer CCW	
3	Shield	
4	10 k Ohm Potentiometer CW	
5	Remote On (+24 V)	only with option RCS !
6	Remote On (-)	only with option RCS !

Important: Always use a shielded cable. Always connect shield to pin 3.

Specifications BMT 803N

line voltage	230 VAC (115 on request)
line frequency	50/60 Hz
power consumption	160 W
operating ambient temperature	0 to +40°C (non condensing)
feed gas	pure oxygen
flow rate	0.1 to 3 l/min
ozone production at 100 g/Nm^3	8 g/h optional version BMT 803N HP: 9 g/h)
max. ozone concentration	> 250 g/Nm^3
max. pressure	1 bar gauge (2 bar abs) optional version BMT 803N HP: 2 bar gauge
cooling	air
life expectancy of fans	40,000 hours
dimensions	approx. 391 x 170 x 151 mm
weight	approx. 6.5 kg
control range	15 – 100%
fittings, for 3 x 5 mm PTFE tubing	stainless steel
¼" VCR on request	both, inlet & outlet (male body)
¼" Swagelok (SS) on request	both, inlet & outlet


151
170
391
OZONE GENERATOR BMT 803
ADJUST
OUT
BMT MESSTECHNIK, BERLIN


BMT803
Ozone concentration and production at 1.5 bar abs
P=135W T amb=20°C
g/Nm³
g/h
Nl/min
14.02.2000
g/Nm3
g/h
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0,2
0,4
0,6
0,8
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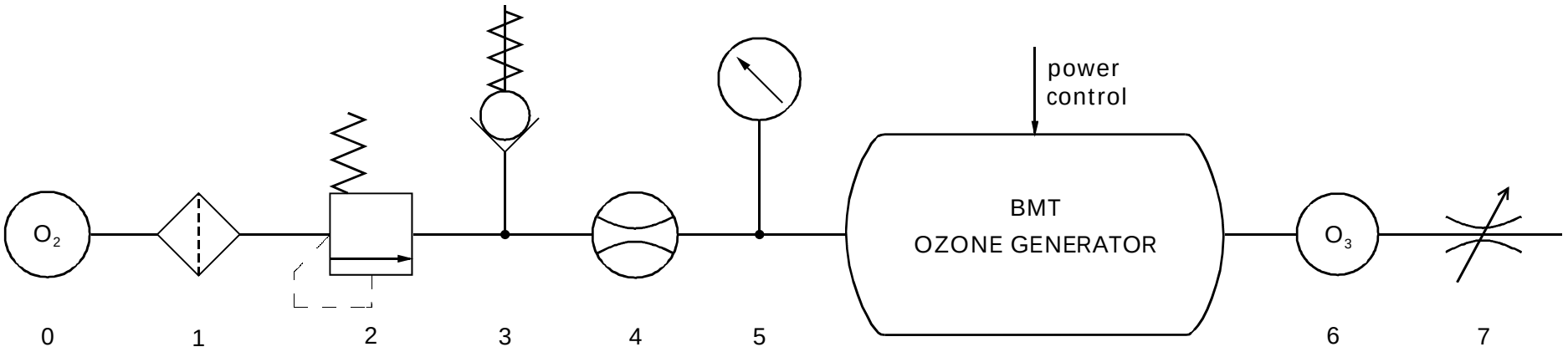
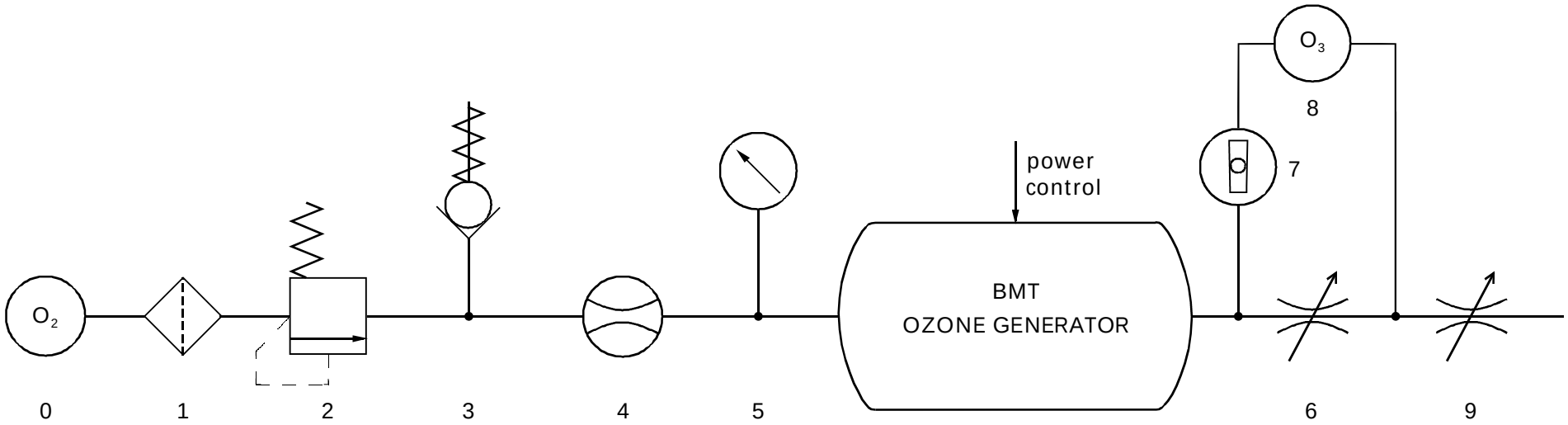
3,2
3,4
3,6
3,8



Attention: Tubing should be PTFE,
even between 0 and 5 !

0 oxygen source (5 bar max.)
1 filter (optional)
2 pressure regulator
3 pressure relief valve (safety valve)
4 flow meter (oxygen mass flow)
5 pressure gauge
6 ozone analyzer, PRESS version (flow < 1 l/min)
7 throttle valve

Installation of Ozone Generator (low flow, below 1 l/min)



Attention: Tubing should be PTFE,
even between 0 and 5 !

0 oxygen source (5 bar max.)
1 filter (optional)
2 pressure regulator
3 pressure relief valve (safety valve)
4 flow meter (oxygen mass flow)
5 pressure gauge
6 throttle valve (bypass)
7 rotameter
8 ozone analyzer, PRESS version (flow < 1 l/min)
9 main throttle valve

Installation of Ozone Generator (high flow, above 1 l/min)