



## Data Sheet/Quotation

### SePhys ZB 11–120° Internal Swirl Spray Burner

**Flame shape: Upside-down vertical cone**

**Fuels: Extra light (# 2) heating oil and fatty acid methyl ester (FAME, aka biodiesel)**

Oil nozzle outer diameter/full flame cone angle (hence ZB 11–120°) .....	11 mm / 120°
Maximum throughput (standard nozzle/power nozzle).....	100/120 l/h
Maximum thermal power output $P_{max}$ (standard nozzle/power nozzle).....	1.0/1.2 MW
Turndown ratio ( $P_{max}/P_{min}$ ) .....	4 : 1
Load control .....	fuel-flow valve
Fuel fed into burner by .....	gravity
Atomizing medium.....	air or steam
Working pressure air/steam (constant over the whole load range).....	1.15 bar
Air consumption (minimum compressor intake – standard nozzle).....	476 l/min
Steam consumption (standard nozzle/power nozzle).....	23/26 kg/h
Position .....	vertical
Height.....	232 mm
Maximum diameter.....	49.8 mm
Material .....	100% stainless steel
Burner lance* .....	EUR 7500.00 plus VAT
Universal ZB 11-17 burner mount* .....	EUR 1250.00 plus VAT
Universal ZB 11-17 superheater element* .....	EUR 1000.00 plus VAT
Air duct ZB 11-12 or ZB 17* .....	EUR 6500.00 plus VAT

\* The quoted prices are the same for all ZB burners: ZB 11–90°, ZB 11–120°, ZB 12–90°, ZB 12–120°, ZB 17–90° (see below). Quantity rebates upon request.

Quoted prices valid in 2018. - Certain firebox geometries preclude the use of the standard air duct. Special air ducts are available at extra charge.

#### Emissions (standard nozzle, diesel fuel, compressed air @ 1.15 bar)

CO .....	0 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )
NO <sub>2</sub> .....	173 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )
HC <sub>propane</sub> .....	0 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )

#### Emissions (standard nozzle, diesel fuel, steam @ 1.15 bar)

CO .....	0 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )
NO <sub>2</sub> .....	163 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )
HC <sub>propane</sub> .....	0 mg/m <sup>3</sup> (at 3 % O <sub>2</sub> )

Usual atomizing medium is steam; compressed air is only used for heating up the boiler.

## **System advantages**

- ZB 11 models for both extra light (#2) heating oil and FAME (biodiesel).
- ZB 12 and ZB 17 models also for fuels of medium high viscosity.
- Low fuel consumption due to excellent combustion.
- No fuel pump.
- Simple controls – NO electronics necessary.
- No external steam necessary for boiler start-up – pilot burner uses compressed air until boiler is in steam.
- Identical constant working pressure for air and steam over the whole load range.
- No moving parts.
- 100% stainless steel.
- Maintenance-free.
- No brick lining in firebox necessary.
- Very low emission values.
- Absolutely odorless combustion even with FAME made from waste vegetable fat.
- Very good price/performance ratio.

## **Latest developments**

- The ZB 11–120° version with the above data is now available off the shelf.
- If only #2 heating oil is used, air consumption (minimum compressor intake) can be reduced to 385 l/min (ZB 11 models).
- For medium heavy fuels such as used lube oil reconditioned for use as a heating oil or the better distillation residues from biodiesel production, the new ZB 12–90° and ZB 12–120° burner lances are available. The bigger nozzle with its larger cross section compensates for the higher viscosity of the fuel, thus ensuring the same thermal output power. The two medium heavy fuels mentioned above can be used without preheating down to + 15 °C although preheating greatly increases the throughput.
- A ZB 17–90° burner lance with a thermal output power of 4 MW (#2 heating oil) is now available.

Engineering support is available to offer a complete solution to any application problem (at extra charge).

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