

## Operating instructions

### for the burner igniter

### BZ ËV 24 TK



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## 1. Description of the igniter

The portable burner igniter type BZ . V 24 TK has been designed for the safe ignition of gas and oil burners, as requested by practical considerations. It consists of an aluminum die-cast casing with handle, push-button and carrying strap, the latter housing the power electronics as well as two maintenance-free, closed lead-acid batteries. These batteries are suitable for applications with frequent charging/discharging cycles. To protect battery lifetime, an additional LED will show the low state of charge.

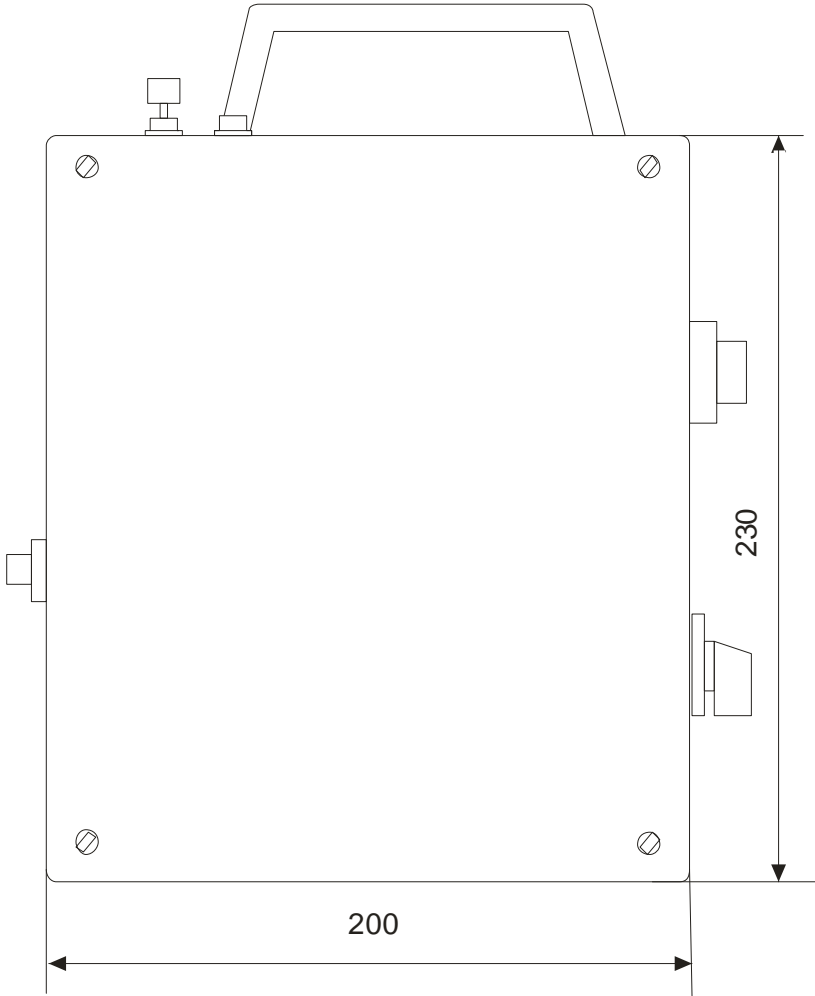
The high-energy spark plug with the plug extension has a handle. The high-voltage cable is tightly connected with the ignition lance and, via a plug-in connector, with the electronic module. The operating voltage will be fed in thru the control switch underneath the appliance inlet for connecting the battery charger, and the igniter will be activated by pressing the push-button (please observe the start-up instructions!). A yellow-LED installed there will indicate the ignition function.

### 1.1. Technical data of the igniter:

Operating voltage:	24 V DC
Ignition voltage:	1 600 V
Ignition frequency:	25 Hz ÷ 30 Hz
Maximum continuous ignition:	2 min (ED 66%)
Battery:	Lead-acid batteries in dryfit technology, electrolyte acc. to DIN 43534
Voltage:	2 x 12 V
Nominal capacity:	1.2 Ah each
Charging time:	Approx. 4 hours
Weight:	5.3 kg
Degree of protection:	IP 65
Casing:	Aluminum die-cast casing, color RAL 7001 gray
Dimensions:	(w x h x d) 200 x 230 x 110 mm (Fig. 1)
Ambient temperature:	-15 ÷ +60° C
Spark plug temperature:	480° C, briefly 800° C
Useful life spark plug:	10 <sup>6</sup> sparks (approx. 12 hrs. ignition time with 25 sparks/sec)
Ignition energy:	30-37,5 Joule per second, depending on the battery charging
Ignition lance diameter:	18 mm
Ignition lance length:	Supply according to plant requirements (customized)
EMC basic industry standard to	EN 61000-6-2 (emitted interference 08/02) and EN 61000-6-4 (noise immunity 08/02); CE mark awarded

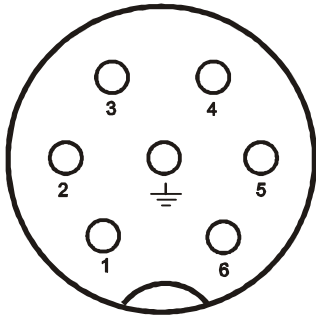
### 1.2 Casing configuration

Fig. 1



### 1.3 Connection of the battery charger at the appliance inlet

Fig. 2



soldering connection	wire strand marking
1 free	-
2 free	-
3 charging voltage -	blue
4 charging voltage +	brown
5 free	-
6 free	-
⏏ protective conductor PE	green/yellow

## 2. Operating principle

The operating voltage will be transformed to 1.6 kV, so that a capacitor can be charged. Once the above voltage is reached, a spark gap in the casing becomes conductive, while the capacitor is being discharged via the high-energy spark plug. Thus, a light arc with high energy content is generated. The electronic system is dimensioned in such a way that a discharge frequency of approx. 25 Hz will be generated. The energy content of the spark as well as the high ignition frequency will facilitate the problem-free ignition of the fuel-air mixture in the burner. The igniter is designed short-circuit-proof and secured against surge voltages. Should the appliance be started with an open discharge circuit or with a faulty high-energy spark plug, the operating voltage will be automatically cut off and the appliance be blocked. A re-start is only possible by switching off the operating voltage (with the push-button being released). An ON time of 66 % is possible, despite the high currents that flow during the ignition process.

## 3. Start-up

You have to charge the battery before the first startup!

Before starting the igniter, check the physical condition of the ignition lance and, especially, of the ignition cable. Should a cable plug or its insulation be damaged, the appliance must not be used. If the red LED is on, the discharge voltage is reached and the startup to be omitted and the batteries to be recharge immediately. The igniter must only be started with the ignition lance inside the burner.

### **Operating the burner with the ignition lance outside is not allowed!**

The appliance shall be started in the very place, where it is supposed to be used. In order to start the appliance, connect the high-voltages cable of the ignition lance with the igniter's high-voltage (HV) socket. Position the spark plug at the burner close to the fuel emitted from the burner nozzle.

Then turn on switch S1 underneath the appliance inlet for the battery charger. The igniter is actually started by pressing the push-button next to the carrier handle. An internal circuit will signal via the indicator light installed in the appliance that the igniter is ready for operation. An intensive light arc will become visible at the high-energy spark plug. The fuel inlet can now be opened. The energy content and the high ignition frequency will facilitate a problem-free ignition of the fuel-air mixture. After the flame has appeared, the igniter can be deactivated, while the lance should be speedily removed from the flame area (with the spark plug's admissible temperature being observed!) and the spark plug should not be touched. The plug's retention time in the flame will generate temperatures than can cause burns.

Make sure during the ignition process that the maximum duration of one attempt does not exceed 2 min (danger of overheating the power electronics). Igniting several burners successively should not cause problems, since the change-over time in between is sufficient to let the individual burners cool down thus avoiding excess temperatures. After the ignition process has been completed, disconnect the operating voltage by turning off switch S1 and, for better handling, remove the lance from the igniter.

**Make sure during shipments of the high-energy igniter that switch S1 (connection with the mains) is turned off.**

#### **4. Battery charger**

The automatic desk-top battery chargers type BCA 24-1 and type BCA 24-1G are intended for charging the lead-acid batteries installed in the igniter. No warranty will be granted, when other battery chargers are used.

Connect the power plug with the 230 V AC / 50 Hz mains socket and the cable socket of the spiral cable with the igniter. Leave switch S1 at the igniter in the OFF position. The green LED lamp indicating ready for operation and the red LED charging indicator at the battery charger are lighting up. If the green LED lamp goes out, the system is short-circuited or the battery is defective and the power supply must be cut off. If the red LED lamp goes out, the charging current is less than 200 mA and the batteries are fully charged. Unplug the power cable from the socket and disconnect the igniter.

#### **Technical data of the battery charger:**

Input voltage:	230 V AC / 50 Hz $\pm$ 10 %
Output voltage:	24 V DC, 1.0 A
Charging characteristic:	IU
Charging end:	at 27.6 V DC set as default value
Temperature range:	-10° C ÷ +30° C
Degree of protection:	IP 20 (optional IP 65 for the casing)
Protection class:	II
Casing:	ABS (optional: aluminum die-cast with carrier handle)
Dimensions:	(w x h x d) 140 x 100 x 80 mm (200 x 140 x 91 mm)
Weight:	1.25 kg (in the casing: 2.3 kg)
Protective device:	electronic protection against short-circuit, false polarity and overloading, temperature-fused
Displays:	1 green & red LED each
Standard:	corresponds to EN 60-335-2-29
Approvals:	CE, S, D, FI

## 5. Faults & break-downs

After connecting the ignition lance, turning on the control switch and pressing the push-button:

Fault	Possible cause	Remedy
No firing spark LED off	Power cut	Charge batteries, check fuse in the igniter replace fuse, if necessary
LED lights only briefly	Defective spark plug	Replace spark plug (see section %Repairs+)
	HV-cable not properly connected	Connect cable at the electronics casing
	Defective spark gap	Replace spark gap (see section %Repairs+)

## 6. Repairs

### Warning!

Only suitably qualified staff is authorized to exchange the wear parts. Use only original spares. Disconnect the battery charger during any repair work. Put switch S1 in its O-position before working on the appliance. Remove fuse F 1 (see Fig. 3) immediately after opening the cover lid. When repairing the spark plug, disconnect the HV-cable from the igniter (by pulling out the HV-plug).

### 6.1. Replacing the high-energy-spark plug

- disconnect the HV-cable from the igniter
- unscrew the worn-out high-energy spark plug (**warning: high temperatures possible!**)
- slide off the protective tube from the replacement plug; the thread has been treated with a high-temperature paste (which prevents the spark plug from getting stuck in the socket)
- insert the new spark plug into the ignition lance and screw it in finger-tight
- re-assemble the plug in reversed order

## 6.2 Replacing the spark plug connector and the high-voltage cable

- The spark plug connector and a defective high-voltage cable can only be exchanged at the manufacturer's premises. These parts are also available as a complete spare part module by stating the length of the ignition lance.

## 6.3 Replacing the spark gap

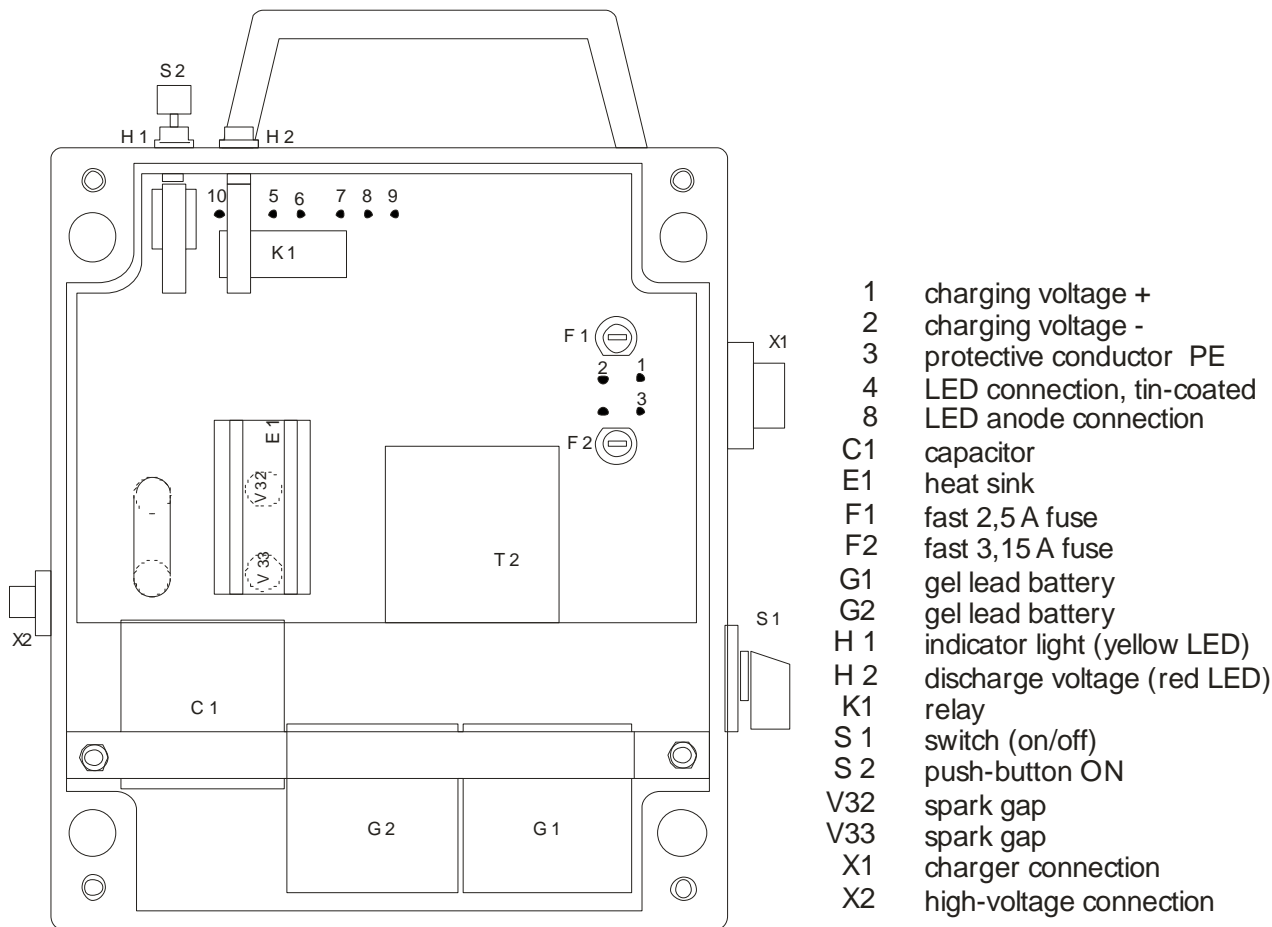
### **Caution: high-voltage!**

Put switch S1 in its O-position before working on the appliance. Remove fuse F 1 (see Fig. 3) immediately after opening the cover lid. A voltage of approx. 1 600 V for the ignition process will be generated in the appliance, which may still be applied for to the HV-capacitor and to the spark gap for a few seconds, although the igniter has been switched off. After the casing has been opened, the heat sink (E1) next to the HV-capacitor (C1) will become visible. It connects the two spark gaps (see Fig. 3).

Loosen the two M 3 nuts with a 5.5-mm socket wrench, pull off the toothed lock washers and remove the heat sink. Turn out both spark gaps. Please take care when fitting in the new spark gaps that they are screwed in finger-tight (i.e. without using any tools). The heat sink can be re-assembled and fixed with the M 3 nuts and tooth lock washers. Reinsert fuse F 1 and close the cover lid.



Fig. 3



## 7. Maintenance

Because of its heavy-duty design, the igniter does not require any maintenance. Should deposits settle on the spark plug due to the plant's specific conditions, they can be removed with a cloth or a brush (**but do not use metal brushes, in order to avoid short circuits**). When doing so be aware of the spark plug temperatures.

## 8. Spares

The high-energy spark plug and the spark gaps are wear parts and will not come under the warranty conditions. The useful life of these parts depends on the number of ignitions and the ambient conditions.

### 8.1. Spare part list

High-energy spark plug:	Type HK 20/40	Part No. Z 100.3
Spark gap:	Type V 800	Part No. Z 106
Ignition lance with HV-cable:	Type ZS 100 K	Part No. Z 122.1

## 9. Delivery conditions

Deliveries will basically be made on the basis of our General Terms and Conditions.

## 10. Storage

To maintain the full power supply of the lead-gel-battery in the ignition device, the products should not be stored for more than 24 months without a new charge. It is recommended to maintain charge the battery every 6 months using the charger supplied. (See chapter 4)

### **Please note:**

The spark gap and the high-energy spark plug are wear parts and thus exempted from the warranty, since their service life depends on the number of ignitions and the conditions of use.

## 11. Warranty

From the day of delivery we accept the warranty for a period of 24 months to eliminate possibly errors or defects may cause an exchange. Requirement is, that an error can be attributed to defects in components or manufacture.

The warranty is void if procedures are performed by the user or by third parties that is not expressly authorized in writing by us.

Repairs will be done exclusively in our own repair shop. We do not accept repair bills from others. The delivery of faulty equipment at d.s.f. GmbH must be freight free.

## 12. Liability

We are not liable for consequential damages of any nature, which may arise in combination with any of our products. For any claims resulting from the failure to comply with this instruction manual, d.s.f. GmbH will also not be liable in any way.

Subject to changes and modifications in the sense of the technical progress without prior notice (Stand: 02/2012).