



**PARS SWITCH**

# PARS SWITCH

Progressive Improvement of Quality is Our Main Goal

## SF6 CIRCUIT BREAKER **LTB E**

With Auto-Puffer System for outdoor installation

■ Rated voltages :245 - 420 kV

■ Rated current :4000 A

■ Rated breaking current : up to 50 KA



**Pars Switch Co.**

Manufacturer of Medium & High Voltage Circuit Breakers and Disconnecting Switches

### Introduction:

LTB E is an Auto-Puffer™ type SF6 circuit-breaker designed for system voltages 245 - 420 kV and for rated short-circuit currents up to 50 kA. The design incorporates an improved Auto-Puffer™ interrupter based on experience gained from previous interrupter designs.

The energy required for interrupting short-circuit currents is taken partly from the arc itself, thereby reducing the energy required from the operating mechanism by more than 50 percent compared with a conventional SF6 puffer type circuit-breaker.

### Main features and advantages:

The LTB circuit-breaker family satisfies the highest demands. It is based on latest developments in dielectric dimensioning and arc research. Advantages are as follows:

#### Advantage:

- ◆ Restrike-free interruption of capacitive currents ...
- ◆ Low overvoltages when switching inductive currents ...
- ◆ High dielectric strength even at atmospheric SF6 pressure ...
- ◆ High security against gas leakage ...
- ◆ Long maintenance intervals ...
- ◆ Reliable components ...
- ◆ High seismic withstand capability ...
- ◆ Low noise level ...
- ◆ Easy installation and commissioning ...
- ◆ Optional synchronized switching ...
- ◆ Optional supervisory control ...

The low energy requirements result in a design optimized for the low operating forces which in turn results in higher reliability.

All single pole operated circuit-breakers are equipped with one operating mechanism per pole.

Circuit-breakers with one breaking unit per pole can be operated with one operating mechanism per breaker.

The LTB EN circuit-breaker complies with the international standards IEC and ANSI.

#### Due to:

... optimized contact design and movement.

... optimum quenching at current zero.

... optimized contact gap.

... double X-rings in all dynamic seals and double O-rings in static seals, verified during more than 30 years of field operation at varying climatic conditions. (SF6 gas loss much less than 1 percent/ year.)

... separate current paths for continuous and arcing currents, respectively.

... all parts optimized, aided by advanced computer technology, for electrical and mechanical stresses

... optimized pole and structure.

... low mechanical energy required for operation.

... each circuit-breaker is pre-tested and shipped to erection site in the form of a few pre-assembled units.

... synchronizing relay type Switchsync™.

... condition monitoring type Switchguard™ / Switchcontrol™.

## Testing:

- ◆ The circuit-breakers have passed type tests according to IEC.
- ◆ Mechanical endurance tests have been performed to 10000 operations.
- ◆ Before delivery each circuit-breaker must pass routine tests in accordance with IEC and ANSI.
- ◆ For each breaker a routine test report is issued showing actual test results.

## Design:

The breaker pole constitutes a sealed unit, which includes one or two breaking unit(s), support and operating insulators, and pole linkage housing. To the latter the tripping spring is attached.

To ensure the quality of the SF6 gas, each breaker is provided with a filter for moisture absorption.

## Operating mechanism:

The circuit-breaker is operated by motor charged spring operating mechanism, which is installed in a compact splash-proof and corrosion resistant housing, attached to the structure.

- ◆ Three BLK 222's are used for single pole operation at 245 kV.

- ◆ One BLG 1002A is used for three pole operation at 245 kV.
- ◆ Three BLG 1002A's are used for single-pole operation at 420 kV.

For further details please see pamphlets SESWG/B2504E and SESWG/B 2506E.

## Transport and erection:

The LTB circuit-breaker poles are transported as complete units filled with SF6 gas to a slight overpressure. Circuit-breaker poles with two breaking units per phase are supplied as two separate units: breaker-head and support insulator. The circuit-breaker is routine tested in the factory. Erection work at site can be done in less than one day.

Filling of SF6 gas to specified working pressure is done by using the following pressurizing equipment:

- ◆ One special control valve, for connection to the SF6 gas bottle, and a gas-filled hose with connectors.
- ◆ Gas filling can be done without SF6 gas being released into the atmosphere.
- ◆ No gas treatment is necessary before gas filling .

**Technical data**

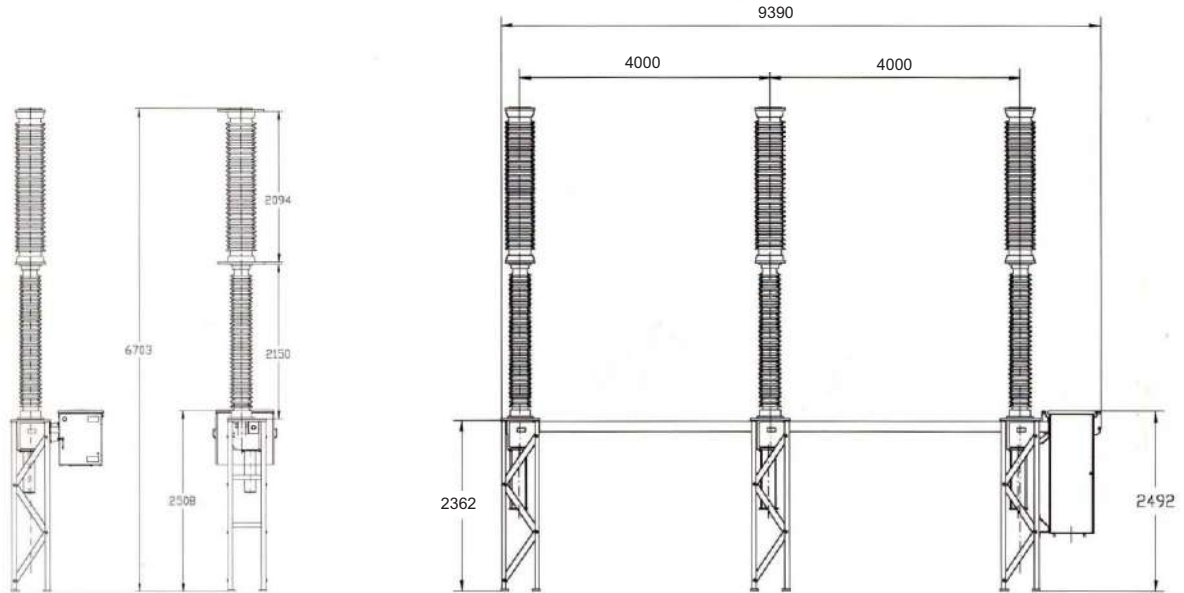
**Values complying with IEC 56 (50 Hz)**

		LTB		
		245E1	420E2	420E2
Number of breaks per pole		1	2	2
Rated voltage	kV	245	362	420
Power frequency withstand voltage (1 min.):				
To earth	kV	460	520	520
Across open pole	kV	460	450	610
Lightning Impulse Withstand Level (LIWL):				
To earth	kV	1050	1175	1425
Across open pole	kV	1050	1175(+205)	1425(+240)
Switching Impulse Withstand Level (SIWL):				
To earth	kV	-	950	1050
Across open pole	kV	-	800(+295)	900(+345)
Minimum creepage distance	mm/kV	25/31	25/31	25/31
Rated normal current	A	4000	4000	4000
Rated breaking current	kA	50	50	50
First pole to clear factor		1.5	1.3	1.3
Making current / peak	kA	125	125	125
Duration of short circuit	s	3	3	3
Closing time	ms	40	70	70
Opening time	ms	17±2	18±2	18±2
Total break time	ms	40	40	40
Dead time	ms	300	300	300
Rated operating sequence		O - 0.3 sec - CO - 3 min - CO		
		Alt : CO - 15 sec - CO		

Other values on request

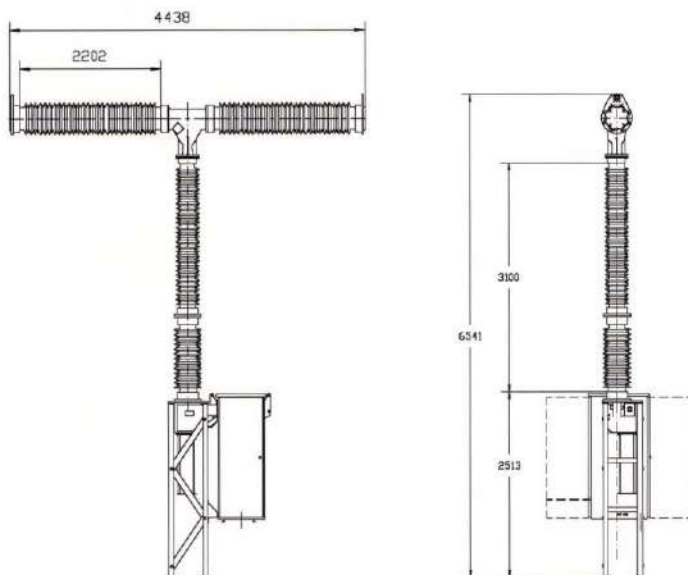


**Dimensions:**



**LTB 245E1**  
1-pole operation with BLK 222

**LTB 245E1**  
3-pole operation with BLG 1002A



**LTB 420E2**  
1-pole operation with BLG 1002A



**PARS SWITCH CO.**



# مَبسان

(مهندسی بازرگانی سیستم‌های انتقال نیرو)

تامین و فروش تجهیزات 20Kv (دژنکتور، تابلو، کابل، ترانس) و ...

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