



TECHNICAL MANUAL

Air circuit breaker

VA-45 v2 EKF

1 DESCRIPTION

1.1 The air circuit breakers VA-45 v2 up to 6300 A EKF are designed to carry current under normal conditions and break overcurrent (short circuits and overloads, including single-phase earth faults) to be used in three-phase 50/60 Hz AC circuits at rated voltage up to 690 V.

1.2 The air circuit breakers (ACB) comply with IEC 60947-2.

2 APPLICATION

- As the main circuit breaker;
- Protection of electric motor circuits;
- Protection of outgoing lines, switchboards and distribution panels;
- Electrical circuit isolation and partitioning (three ACBs);
- Protection of outgoing lines on the consumer side of 10/0,4 kV transformer substation.

3 TECHNICAL DATA

Table 1

Parameter		Value			
		VA-45/2000	VA-45/3200	VA-45/4000	VA-45/6300
Rated current I_n , A		630, 800, 1000, 1250, 1600, 2000	2000, 2500, 3200	3200, 4000	5000, 6300
Ultimate short-circuit breaking capacity I_{cu} , kA	Ue 400 V	85	100	100	120
	Ue 690 V	60	65	65	80
Service short-circuit breaking capacity I_{cs} , kA	Ue 400 V	70	65	65	80
	Ue 690 V	55	50	50	70
Rated maximum making capacity I_{cm} , kA	Ue 400 V	187	220	220	264
	Ue 690 V	132	143	143	176
Rated short-time withstand current for 1 sec. I_{cw} , kA	Ue 400 V	70	65	65	85
	Ue 690 V	40	65	50	65
Mechanical endurance, C-O cycles	With service	10 000	8 000	8 000	5 000
	Without service	2 500	2 500	2 500	2 500
Electrical endurance, C-O cycles	Ue 400 V	6 500	3 000	1 500	500
	Ue 690 V	3 000	1 500	750	300
Rated operating voltage at 50/60 Hz U_e , V AC		380 / 400 / 415 / 690			
Rated insulation voltage at 50/60 Hz U_i , V AC		1 000			
Rated impulse withstand voltage U_{imp} , V		12 000			
Breaking time, ms		25-30			

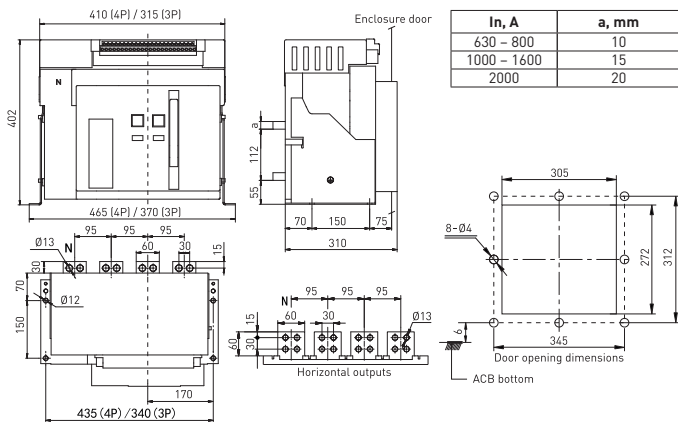
Table 1 continued

Parameter	Value			
	VA-45/2000	VA-45/3200	VA-45/4000	VA-45/6300
Max. making time, ms	70			
Type of trip unit	Microprocessor			
Location of busbars when connected to the ACB terminals	Rear horizontal			
Number of poles (standard)	3P			
Number of poles (made-to-order)	4P			
Utilization category by IEC 60947-2	B			
Degree of protection for surface-mounted ACB	IP30 for front panel IP00 for terminal side			
Operating temperature, °C	from -15 to +65			
Altitude above sea level, m	2000			
Min. service life, years	15			

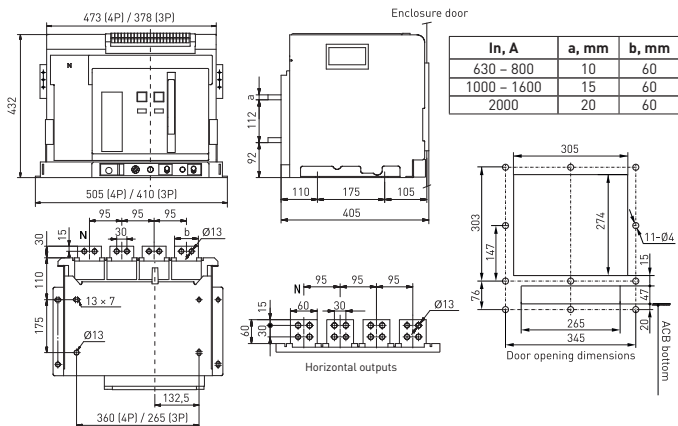
For operating manual, visit our website: ekfgroup.com

4 OVERALL AND INSTALLATION DIMENSIONS

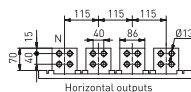
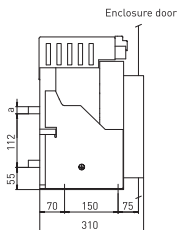
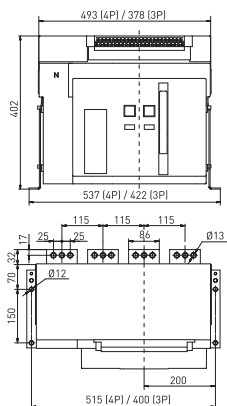
VA-45 2000 FIXED v2



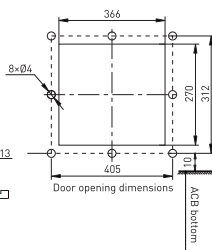
VA-45 2000 WITHDRAWABLE v2



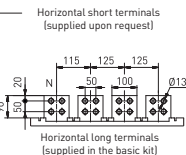
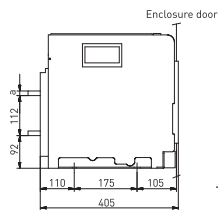
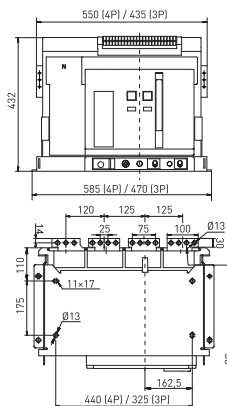
VA-45 3200 FIXED v2



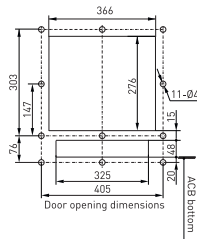
In, A	a, mm
2000 - 2500	20
3200	30



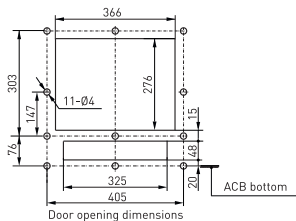
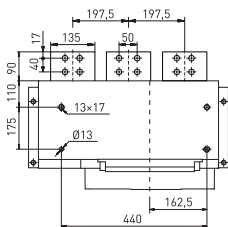
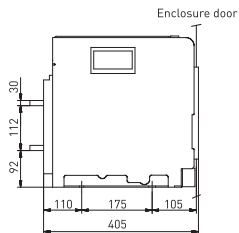
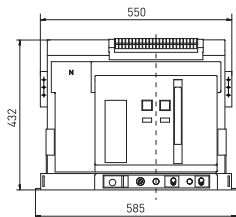
VA-45 3200 WITHDRAWABLE v2



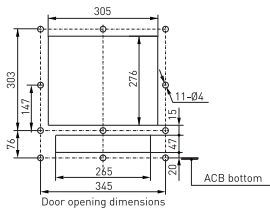
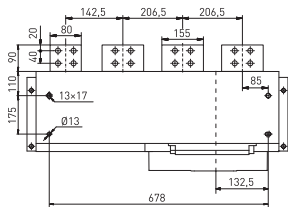
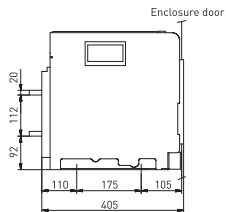
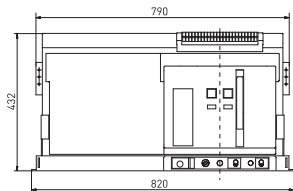
In, A	a, mm
2000 - 2500	20
3200	30



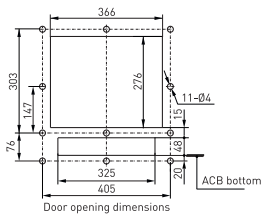
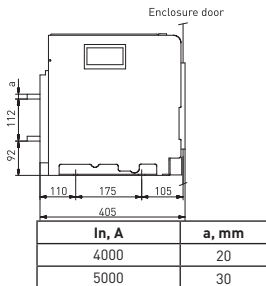
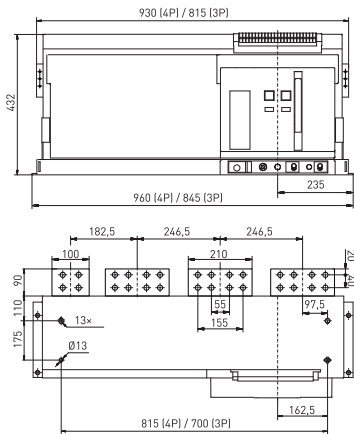
VA-45 4000 3P WITHDRAWABLE v2



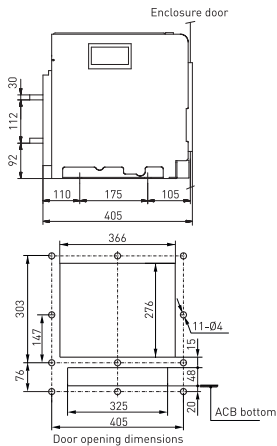
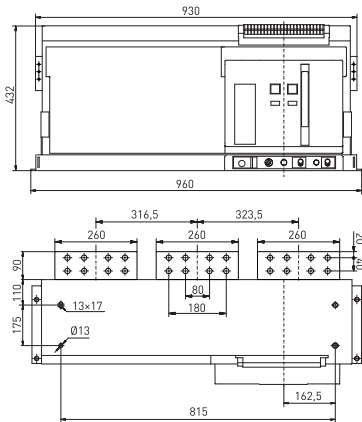
VA-45 4000 4P WITHDRAWABLE v2



VA-45 5000 WITHDRAWABLE v2



BA-45 6300 WITHDRAWABLE v2



Typical wiring diagram

Wiring diagram of secondary and control circuits of the air circuit breaker VA-45 v2

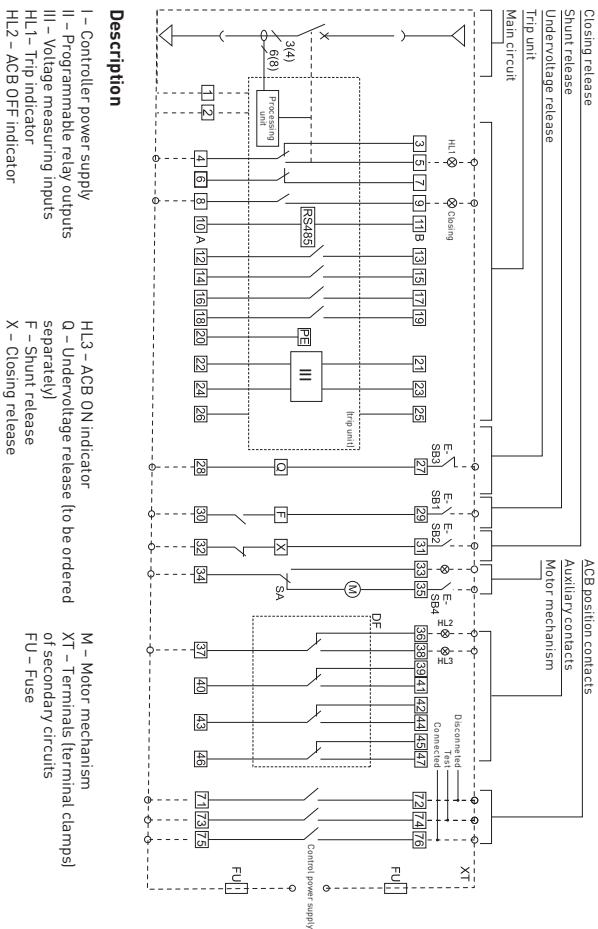


Table 2 - Minimal busbar cross-section

ACB size	Rated current, A	Busbars	
		Size, mm	Quantity, pcs.
1600	200	20 x 5	1
	400	50 x 5	1
	630	40 x 5	2
	800	50 x 5	2
	1000	40 x 5	3
	1250	40 x 5	4
	1600	50 x 5	2
2000	630	60 x 5	2
	800	60 x 5	2
	1000	60 x 5	2
	1250	60 x 10	2
	1600	60 x 10	2
	2000	60 x 10	3
3200	2000	100 x 10	2
	2500	100 x 10	2
	3200	100 x 10	4
4000	3200	100 x 10	4
	4000	100 x 10	4
6300	4000	100 x 10	4
	5000	100 x 10	6
	6300	100 x 10	6

Terminals of the secondary circuits

1–2 — Controller power supply. Caution! The trip units operate at different supply voltages. Before proceeding with operation, make sure that the rated voltage of the controller in your system matches the system's input voltage to avoid potential damage or failure.

3–4–5 — CO contact (4th common pin) - trip alarm contact.

Contact capacity: 250 V AC, 16 A (resistive load);

6–9 — Auxiliary contacts of the ACB status (closed – open).

Contact capacity: 250 V AC, 16 A (resistive load);

10–11 — RS-485 communication interface (Modbus by default);

12–19 — 4 Programmable inputs / outputs (DI / DO).

Contact capacity: DO – 110 V DC / 0,5A, 250 V AC / 5A; DI – 110...130 V DC or 110...250 V AC;

20 — Protective earthing;

21–24 — Voltage measuring inputs. Connect to the incoming line according to the specified sequence (21 – N, 22 – A, 23 – B, 24 – C);

25, 26 — Connection contacts for external neutral current transformer;

27, 28 — Undervoltage release;

29, 30 — Shunt release;

31, 32 — Closing release;

33, 34, 35 — Motor mechanism;

36–47 — Auxiliary contacts (4 CO).

Circuit breaker position contacts (applicable to withdrawable version only):

71, 72 — position contact "Disconnected" (CO)

73, 74 — position contact "Test" (CO)

75, 76 — position contact "Connected" (CO).

5 TRANSPORTATION AND STORAGE

The air circuit breakers can be transported in the original package by any means of enclosed transport that ensures protection of packed products against mechanical impacts and weather exposure.

The air circuit breakers shall be stored indoors in the original package at the ambient temperature from –25 °C to +40 °C and relative humidity of max. 50% at +40 °C (or 90% at +20 °C).

Do not stack the ACB on top of each other for storage.

6 DELIVERY SCOPE

1. Air circuit breaker VA-45 v2 (complete with electric motor, closing release, shunt release, undervoltage release, 4 CO contacts) - 1 pc.;
2. Set of bolts - 1 pc.;
3. Door frame - 1 pc.;
4. Interphase barriers - 2 pcs. (3 pcs. for 4P version)
5. Technical manual - 1 pc.

7 MANUFACTURER'S WARRANTY

The manufacturer guarantees that the air circuit breakers comply with IEC 60947-2 provided that the consumer follows all operating, transportation and storage conditions.

Warranty period: 7 years from the date of sale specified in the sales receipt.

Shelf life: 7 years from the date of manufacture specified on the product package or housing.

Service life: 15 years.

Manufacturer: OOO Elektroresheniya, Otradnaya st., 2b/9, 127273, Moscow, Russia, tel. +7 (495) 788-88-15.

MEA regional headquarters: EKF ELECTRICAL SOLUTION FZCO, Office 249, Techno Hub-2, Dubai Silicon Oasis, P.O. box 341079, Dubai, United Arab Emirates, tel. +971-4-547-06-18.

8 DISPOSAL

Life-expired and failed products shall be disposed of in compliance with the national and local laws and regulations in force.

To dispose of the product, send it to an authorized company for recycling in compliance with the national and local laws and regulations in force.

9 CERTIFICATE OF ACCEPTANCE

The air circuit breaker VA-45 v2 EKF has been approved for operation.

Date of manufacture:

For information, refer to the product package.

Quality control stamp

Online Documents



EAC



v3

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