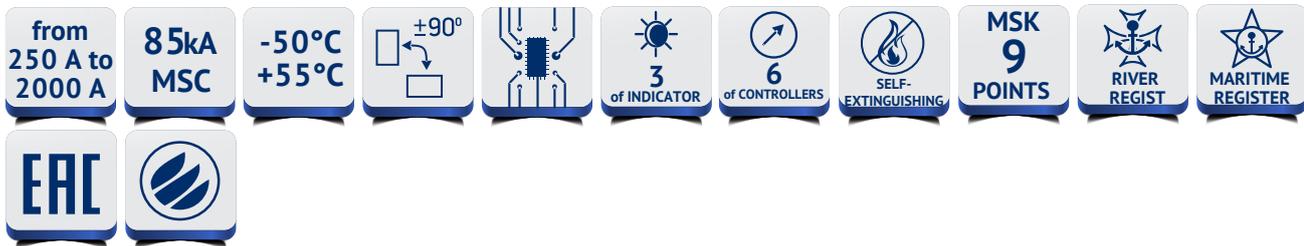


Moulded Case Circuit Breakers (MCCB) of VA53, VA55 series

Comply with the requirements of standards GOST R 50030.2 CU TR 004/2011



Circuit breakers are designed to protect the electrical circuits of alternating current with a frequency of 50/60 Hz, voltage up to 690 V, short circuit currents and overloads, transmission of electricity in the rated mode for infrequent operational switching on and off (up to 6 per hour) of the specified circuits, infrequent direct starts of asynchronous motors. Circuit breakers with the acceptance of the Russian Maritime Register of Shipping (hereinafter RS) and the Russian River Register (hereinafter RRR) are designed to protect marine electrical equipment.

VA53 circuit breakers - current-limiting (category A).

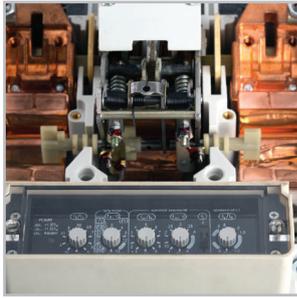
VA55 circuit breakers - selective (category B).



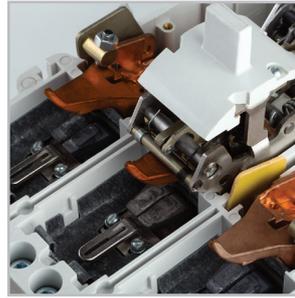
Benefits

- Implementation of any technical solutions
 - Full range of products for currents from 250 to 2000 A;
 - large values of the limiting switching capacity of 85 kA (AC);
 - ability to adjust the current setting and response time.
- Confidence in reliable operation
 - stability of temperature indicators, due to the small transition resistance;
 - availability of resistance to the dynamic and thermal effects of short circuit currents;
 - a guarantee of non-weldability of contacts at emergency short-circuit currents.
- Advanced applications
 - protection of electrical equipment of sea, river ships and port infrastructure, confirmed by type approval certificates of PMRS and RRR;
 - possibility of using in conditions of high vibration and shock resistance (earthquake resistance 9 points according to MSK-64);
 - possibility of application in harsh environments, climatic modifications of UHL and OM.

Features



Availability of microprocessor overcurrent trip device.



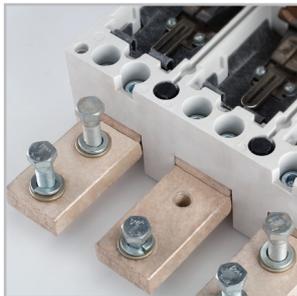
The use of extruded silver graphite contacts in the contact system.



Mounting upright or turning right / left 90°. Power supply from above and below.



Operation temperature from -50 to + 55° C.



Silver plated outputs.

Structure of the designation of circuit breakers VA53 (VA55) series

VA55 (VA53)-X₁-X₂X₃X₄X₅X₆- X₇...A-690AC-X₈...-X₉...-X₁₀...-X₁₁...-KEAZ

VA55 (VA53)	- VA53 - current-limiting (category A); VA55 - selective (category B)							
X₁	- designation of rated current: 41 - 250 A, 400 A, 630 A, 1000 A; 43 - 1600 A, 2000 A							
X₂	- 3 - number of poles							
X₃	- 3 - with microprocessor-VAsed release for protection against overloads, short circuits, single-phase short circuits and inrush current - 4 - with microprocessor-VAsed release for protection against overloads, short circuits, and inrush current							
X₄	- Two-digit number. Designation of additional assembly units:							
	Designation	Number of auxiliary contacts (free)			Number of additional auxiliary contacts (free)		Independent release	Signal contact
		closing	opening		closing	opening		
	with manual drive		with electromagnetic drive					
	00	-	-	-	-	-	-	-
	11	2	2	1	2	2	-	-
	18	1	2	1	2	2	+	-
	45	-	-	-	-	-	-	+
	46	2	2	1	2	2	-	+
	47	1	2	1	2	2	+	+
51	2	2	1	-	-	-	-	
52	1	2	1	-	-	+	-	
X₅	- Type of drive in combination with installation method: 1 - manual drive, stationary version; 3 - electromagnetic drive, stationary version; 5 - manual drive, retractable version; 7 - electromagnetic drive, retractable version (up to 1600A inclusive)							
X₆	- Additional mechanisms: 0 - absent; 6 - bracket for locking a stationary switch with a manual drive in the "off" position							
X₇...A	- Rated current in amperes: 250 A; 400 A; 630 A; 1000 A; 1600 A; 2000 A							
690 AC	- Rated voltage of AC circuit breaker							
X₈...	- Independent release parameters (if available): rated voltage and type of current of the independent release (HP230AC/220DC; HP400AC)							
X₉...	- Electromagnetic Drive Parameters (if any): rated voltage and type of current of the electromagnetic drive (PE230AC; PE400AC)							
X₁₀...	- Climatic category: UHLZ; OM4 (only for circuit breakers with acceptance of the Russian Maritime Register of Shipping)							
X₁₁...	- Type of acceptance, terms of delivery: Э - for export; PEГ - for breakers with acceptance of the Russian Maritime Register of Shipping and the Russian River Register; in the absence - acceptance of quality control							
KEAZ	- Trademark							

Specifications

Designation параметра	Обозначение параметра				
Серии					
	VA53-41	VA55-41	VA53-43	VA55-43	
Number of poles	3				
Rated operating voltage in the AC circuit of 50/60 Hz (U_e), V	690				
Rated current I_n , A	250; 400; 630; 1000		1600 2000**		
Microprocessor release rated current settings in multiples of the circuit breaker rated current, I_R/I_n	0.36; 0.4; 0.45; 0.5; 0.56; 0.63; 0.7; 0.8; 0.9; 1.0				
Setting the response time at a current of $6I_R$, t_R , c	2; 4; 8; 16 ¹⁾ 2; 4; 8; 12 ²⁾				
Setting for the operation current in the zone of short circuit, I_{sd}/I_R	1.5; 2; 3; 4; 5; 6; 7; 8; 9; 10				
Setting of the response time in the selectivity zone T_{sd} , s	0; 0.1; 0.15; 0.2; 0.25; 0.3; 0.35; 0.4				
Instantaneous current without time delay, kA	7	20	14	30	
Category of use	A	B	A	B	
Rated working maximum breaking capacity (I_{cs}) and rated maximum greatest breaking capacity (I_{cu}):					
at a voltage of 400 V and a power factor of 0.2, kA	85	55	85	63	
at a voltage of 690 V and a power factor of 0.25, kA	33.5		33.5		
Wear resistance					
Total, on/off cycles	3000		3000		
Switching of main contacts, on/off cycles	500		500		
Switching of aux.contacts, on/off cycles	3000		3000		
Under the action of an independent release, on/off cycles	500		500		
Rated operating values of mechanical factors in accordance with GOST 17516.1-90	M4				
Earthquake resistance according to GOST 17516.1-90 (MSK-64)	DT, 5, 6 (up to 9 points)				
Operating mode	Continuous				
Outputs of the main contacts allow front connection of copper and aluminum *** busVArS with cross-section, mm	from 40x4 to 2x(60x12)		from 2x(90x4) from 2x(100x12)		
Degree of environmental protection according to GOST 14255	IP20 (breaker shell), IP00 (outlets)				
Weight, kg	to 1000 A	to 1600 A	to 2000 A	to 1600 A	to 2000 A
with manual drive, stationary	up to 28.1	up to 43	up to 48.5	up to 43	up to 48.5
with electromagnetic drive, stationary	up to 35	up to 51	up to 56.5	up to 51	up to 56.5
with Remote manual drive, retractable	up to 45	up to 95	-	up to 95	-
with electromagnetic drive, retractable	up to 50	up to 100	-	up to 100	-

1) for the protective characteristics with inverse-square dependence;

2) for the protective characteristic with inverse cubic dependence;

* in the mode of normal loads according to GOST IEC 60947-5-1;

** only for stationary front-mounted circuit breakers for operating conditions at ambient temperature up to 40° C;

***connection with aluminum buses is possible through sets of clamps for aluminum buses.

Ways to connect

Circuit breaker version	VA55(VA53)-41		VA55(VA53)-43	
	Front attachment of buses	Rear attachment of buses	Front attachment of buses	Rear attachment of buses
Stationary	+	+	+	-
Retractable	-	+	-	+

Ordering Guidelines

The order must include:

- standard version;
- version (stationary / retractable);
- type of current, rated current of the circuit breaker, A;
- rated voltage of the circuit breaker: up to 690 V;
- availability and number of auxiliary contacts (closing / opening);
- type of current and the rated voltage of the independent release (U);
- presence of an electromagnetic drive, its rated voltage and type of current;
- availability and number of auxiliary alarm contacts;
- protection against single-phase short circuits and switching current;
- weight of the circuit breaker;
- climatic category and category of placement;
- type of acceptance, terms of delivery (Quality Control Department - not specified);

➤ Trademark.

By the separate order the following is delivered:

- set of four-socket clamps 4x185 sq.mm VA50-41-UHLZ (code 137611);
- Remote manual drive VA50-41-UHLZ (code 222611);
- Remote manual drive VA50-43-UHLZ (code 228730);
- additional handle VA50-43-UHLZ (code 218750)
- set of clamps for aluminum buses VA50-41-UHLZ (code 142810);
- set of clamps for aluminum buses VA50-43-1600A-UHLZ (code 142811);
- set of clamps for aluminum buses VA50-43-2000A-UHLZ (code 143590);
- PE operating kit for VA53, VA55 (code 243393).

Example of recording the designation of the automatic circuit breaker type VA55-43 for a rated current of 2000 A with a microprocessor overcurrent release with one closing and one opening contact, with two closing and two opening additional contacts, independent release 230 V, signal contacts, electromagnetic drive ~ 230 V stationary version:

VA55-43-334730-2000A-690AC-HP230AC/220DC-PE230AC-UHLZ-КЭАЗ ТУ 3422-038-05758109-2007.

Principle of operation of the release

Microprocessor overcurrent release is part of the circuit breaker VA50 and is designed to determine the state of three-phase electrical frequency AC networks

50/60 Hz voltage up to 690 V with operating currents up to 2000 A and the formation of a shutdown signal of the executive electromagnet when an emergency mode occurs in the protected circuit - overload, short circuit.

The microprocessor overcurrent release includes:

1. Current sensors, functionally representing current transformers placed in the main circuit of the circuit breaker.

Current sensors are designed for proportional conversion of alternating current flowing in the circuit of the main contacts of the circuit breaker into the output current supplied to the input of the electronic circuit of the microprocessor unit, as well as to power the electronic circuit of the microprocessor unit.

2. Microprocessor unit, the electronic circuit of which is based on the ATmega16 microcontroller. The microprocessor unit measures the signals from the current sensors, analyzes and controls the actuating electromagnet in accordance with the microcontroller's control program.

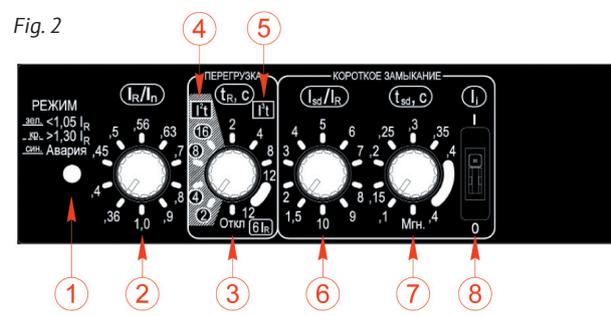
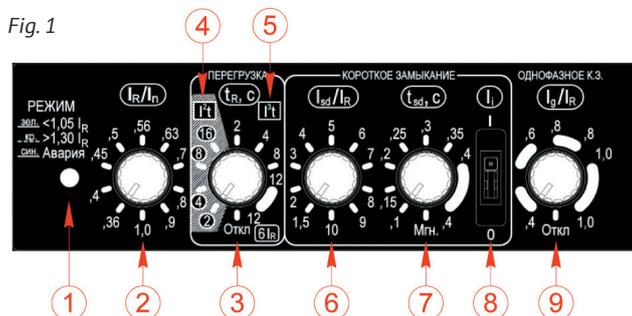
Determination of the protection parameters and operating modes of the microprocessor overcurrent release is carried out using the controls located on the front panel.

Microprocessor overcurrent releases are manufactured in two versions:

1. With protection against single-phase short circuits for circuit breakers of standard versions VA53(55)-XX-33XXXX-00UHLZ.
2. Without protection against single-phase short circuits for circuit breakers of standard versions VA53(55)-XX-34XXXX-00UHLZ.

The front panel of the microprocessor maximum current release with protection against single-phase short circuits is shown in Fig. 1.

The front panel of the microprocessor maximum current release without protection against single-phase short circuits is shown in Fig. 2.



- 1 - indication of the state of the protected electric circuit and the operability of the microprocessor release;
- 2 - rated operating current setting switch;
- 3 - setpoint switch for response time at a current of 6 IR;
- 4 - zone of setpoints for response time for the inverse quadratic dependence;
- 5 - zone of setpoints for response time for the inverse cubic dependence;
- 6 - switch for the setting of operation current in the short circuit zone;
- 7 - setpoint switch for response time in the selectivity zone;
- 8 - on-current protection switch;
- 9 - operation current setting switch for single-phase short circuit.

Item numbers

Name*	Number of poles	Rated current, A	Rated voltage, V	Maximum breaking capacity, kA	Item number
VA55-41-334710-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	55	108214
VA55-41-340010-1000A-690AC-UHLZ	3	1000	690	55	108238
VA55-41-344710-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	55	108178
VA53-41-330010-1000A-690AC-UHLZ	3	1000	690	85	108187
VA53-41-340010-1000A-690AC-UHLZ	3	1000	690	85	108076
VA55-41-334730-1000A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	1000	690	55	108228
VA55-41-344730-1000A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	1000	690	55	108180
VA55-43-334710-1600A-690AC-HP230AC/220DC-UHLZ	3	1600	690	63	108088
VA55-43-340010-1600A-690AC-UHLZ	3	1600	690	63	108250
VA55-43-344710-1600A-690AC-HP230AC/220DC-UHLZ	3	1600	690	63	108194
VA55-43-334730-1600A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	1600	690	63	108100
VA55-43-344730-1600A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	1600	690	63	108197
VA55-43-344770-1600A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	1600	690	63	108235
VA55-43-340010-2000A-690AC-UHLZ	3	2000	690	63	108252
VA55-43-344710-2000A-690AC-HP230AC/220DC-UHLZ	3	2000	690	63	108205
VA55-43-334730-2000A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	2000	690	63	108117
VA55-43-344730-2000A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	2000	690	63	108204
VA53-43-344730-2000A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	2000	690	85	108271
VA55-41-330010-630A-690AC-UHLZ	3	630	690	55	220434
VA55-41-330010-630A-690AC-UHLZ (rear connection)	3	630	690	55	220444
VA55-41-340010-400A-690AC-UHLZ	3	400	690	55	228119
VA55-41-340010-630A-690AC-UHLZ	3	630	690	55	147744
VA55-41-341810-630A-690AC-HP230AC/220DC-UHLZ	3	630	690	55	220431
VA55-41-330010-1000A-690AC-UHLZ	3	1000	690	55	108209
VA55-41-331810-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	55	108172
VA55-41-340016-1000A-690AC-UHLZ	3	1000	690	55	118272
VA55-41-341810-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	55	108242
VA53-41-331810-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	85	143073
VA53-41-331810-1000A-690AC-HP230AC/220DC-UHLZ (rear connection)	3	1000	690	85	220484
VA53-41-341810-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	85	108207
VA53-41-344710-1000A-690AC-HP230AC/220DC-UHLZ	3	1000	690	85	108266
VA55-41-334730-630A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	630	690	55	217109
VA55-41-344730-630A-690AC-HP230AC/220DC-PE230AC-UHLZ	3	630	690	55	147745
VA55-41-334730-400A-690AC-HP230AC/220DC-PE400AC-UHLZ	3	400	690	55	245793

*The complete list of all versions of VA53 and VA55 circuit breakers can be found at www.keaz.ru

Delivery set

Name	VA55/VA53	VA55/VA53 retractable version
Circuit breaker	+	+
The handle of the circuit breaker to control through the door of the HKV for versions with Remote manual drive	-	+
Key for locking the circuit breaker with Remote manual drive in positions "enabled" and "disabled" 2 pcs.	-	+
Lever for moving the retractable circuit breaker 2 pcs.	-	+
Terminal cover for stationary front attachment circuit breakers only	+	-
Additional handle for operating the manual-operated circuit breakers VA55/VA53-43	+	-
Fastening kit for connecting external conductors (1 set)	+	+
Operation Manual	+	+
Certificate	+	+
Certificate of Conformity for a batch delivered to one address	+	+

Additional devices

Auxiliary contacts

Auxiliary contacts VK are designed to switching control circuits. Minimum switching current 5 mA at voltage of 17 V.

Current type	DC			AC			
	Rated voltage, U_e , V	24	110	220	48	127	230
Rated operating current, A	4	1	0,4	4	4	2	1

Auxiliary alarm contact (alarm contact) of auto shut off
 Rated voltage scale:

- 400 VAC 50/60 Hz;
- 220 VDC.

Conventional thermal current, I_{the} - 2 A

	AC				DC		
	Rated voltage, U_e , V	48	127	230	400	24	110
Rated current, I_e , A	4	4	2	1	2	0,4	0,2

The terminals of the auxiliary contacts, the signal contact and the independent release are made with a flexible insulated wire.

Independent trip device

Independent trip device provides:

- switching off the on-off circuit breaker when applying voltage of direct or alternating current to the terminals of the coil of the release;
- disconnection of the circuit breaker when the voltage is applied from 0.7 to 1.2 of the rated value.

The power consumed by the independent release does not exceed 300 watts.

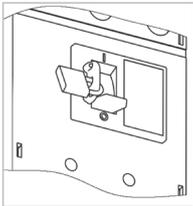
Rated voltage (U_e), V	
AC	DC
230; 400	220

Electromagnetic drive

Electromagnetic drive provides remote control of the circuit breaker at a voltage of 0.85 to 1.1 of the nominal value.

Electromagnetic drive is available in two versions for rated voltages of 230 V and 400 V AC at 50/60 Hz. The power consumed by the electromagnetic drive is not more than $3200 \text{ V} \cdot \text{A}$.

Handle locking device



Handle locking device is designed to lock the circuit breaker switch handle in the "Off" position to ensure the safety of people during the repair and maintenance of equipment.

Retractable version with Remote manual drive

Retractable version with Remote manual drive is designed to quickly replace the circuit breaker and provide a visible break of the current-carrying parts. The retractable version is equipped with locks to prevent attempts to replace the circuit breaker without turning it to the "Off" position.

Set of clamps



Set of clamps for aluminum buses

A set of clamps for connection to aluminum buses is a set of disc washers designed to connect automatic circuit breakers VA55 (VA53).

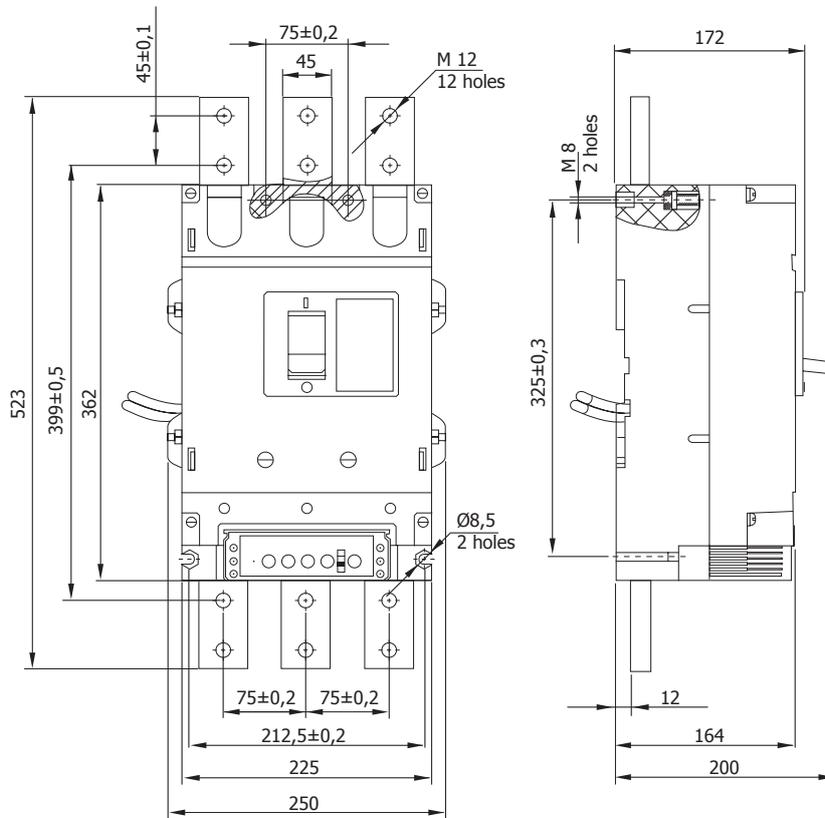


Set of four-socket clamps

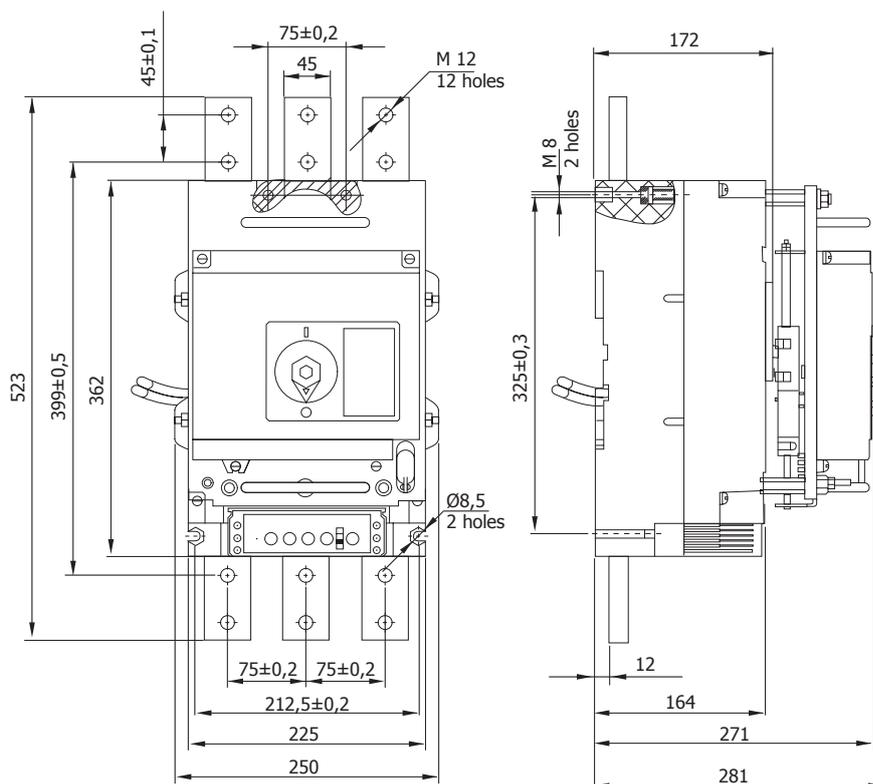
Block for connecting four cables with cross section up to 185 mm^2 without cable lugs. The minimum cable cross-section is 95 mm^2 .

Overall, installation and mounting dimensions

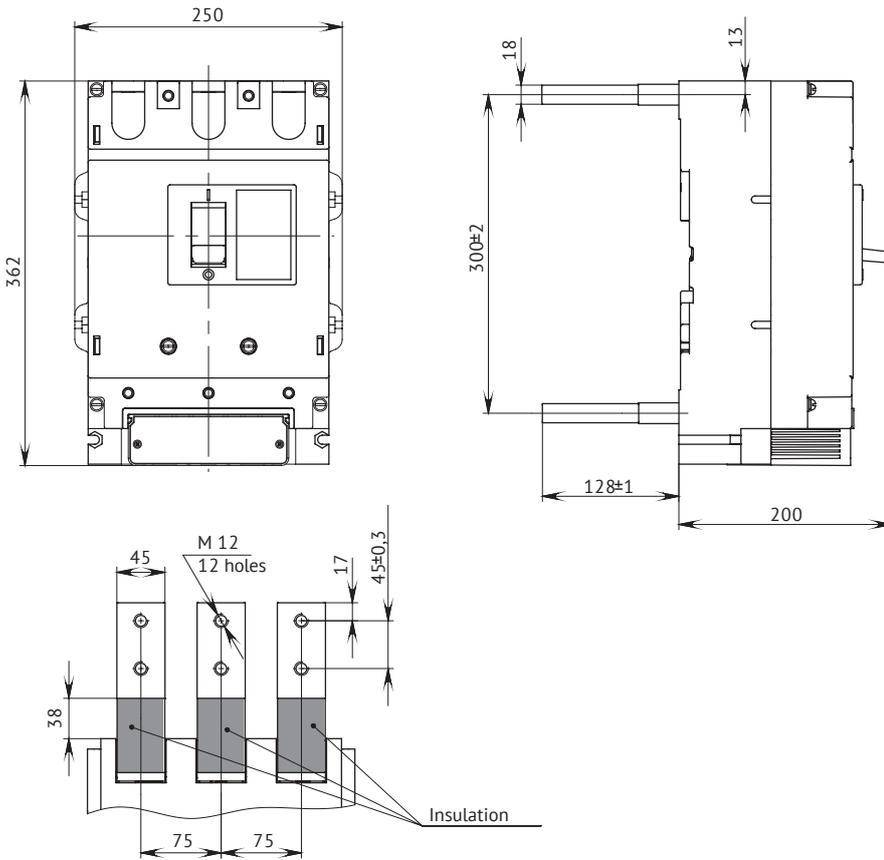
VA53-41 and VA55-41 with manual drive for rated currents 250 A, 400 A, 630 A, 1000 A



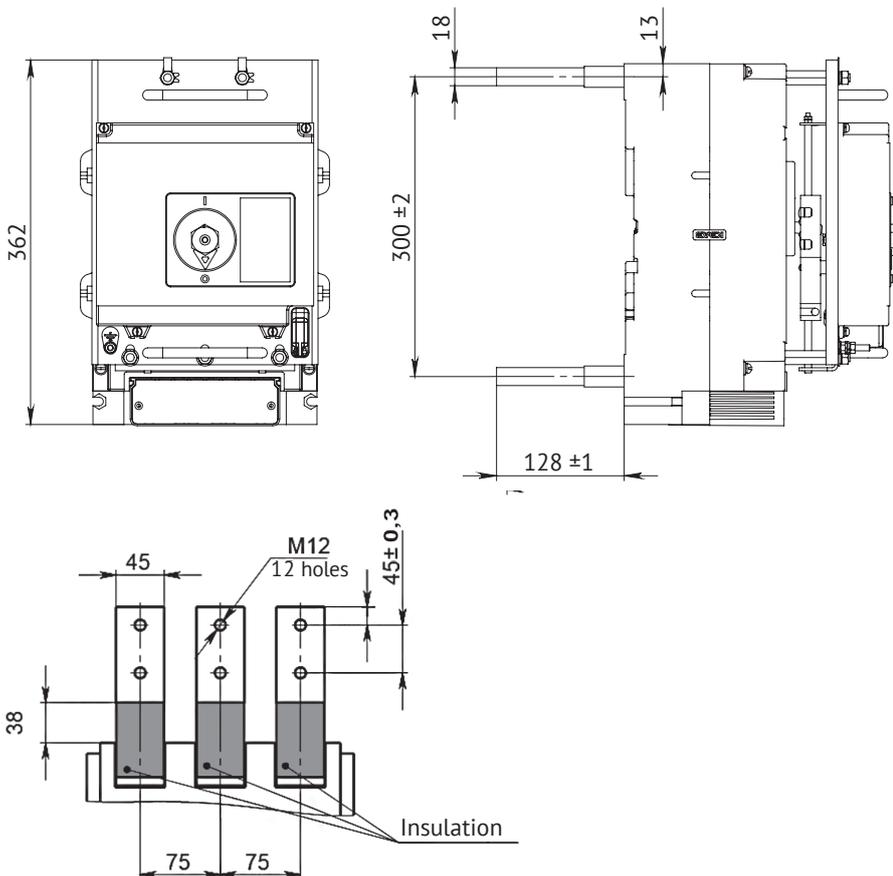
VA53-41 and VA55-41 with EM remote drive for rated currents 250 A, 400 A, 630 A, 1000 A



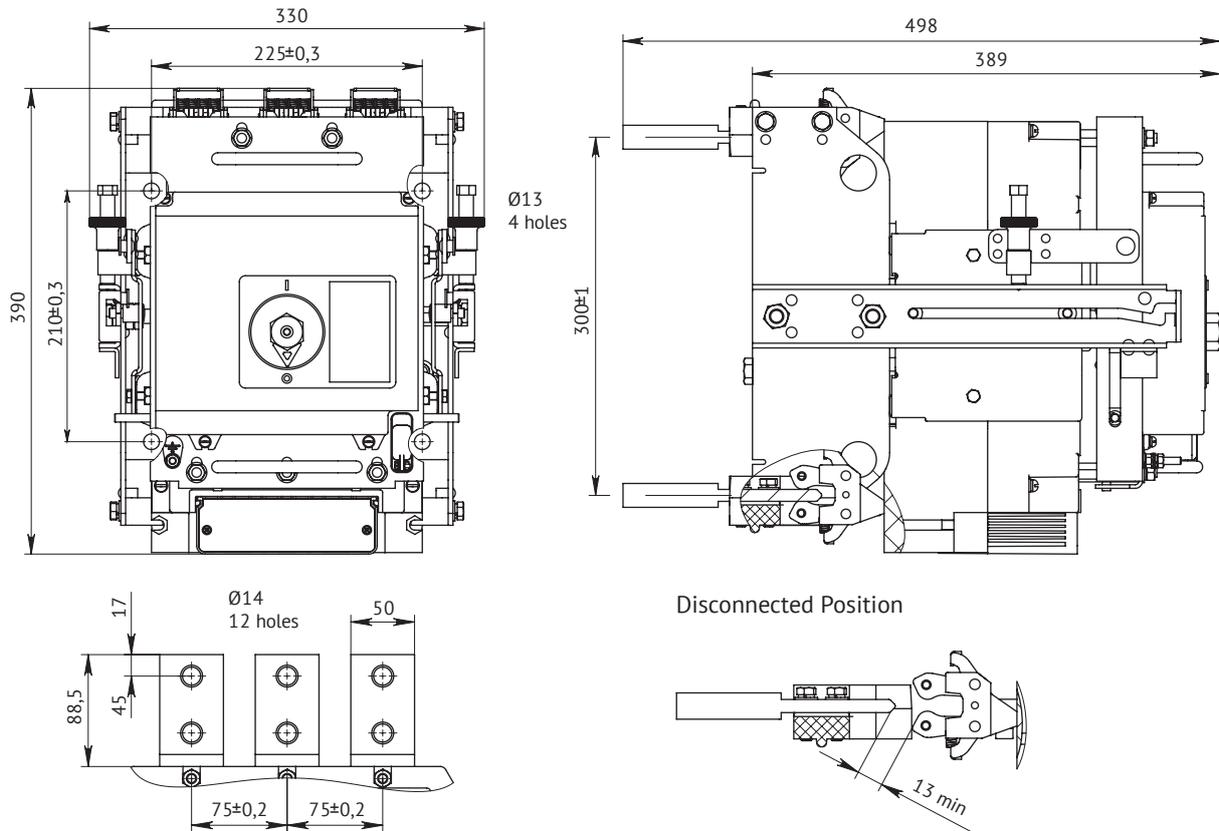
VA53-41 and VA55-41 with manual drive of rear connection for rated currents 250 A, 400 A, 630 A, 1000 A



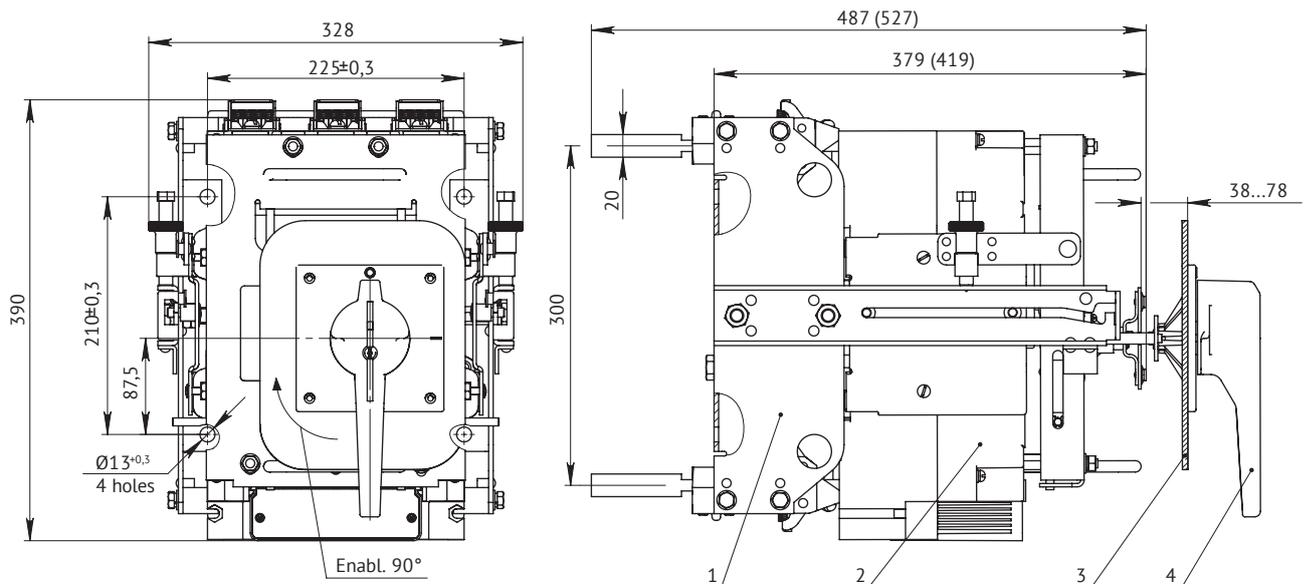
VA53-41 and VA55-41 with EM drive of rear connection for rated currents 250 A, 400 A, 630 A, 1000 A



Retractable versions of VA53-41 and VA55-41 circuit breakers with EM remote drive for rated currents 250 A, 400 A, 630 A, 1000 A



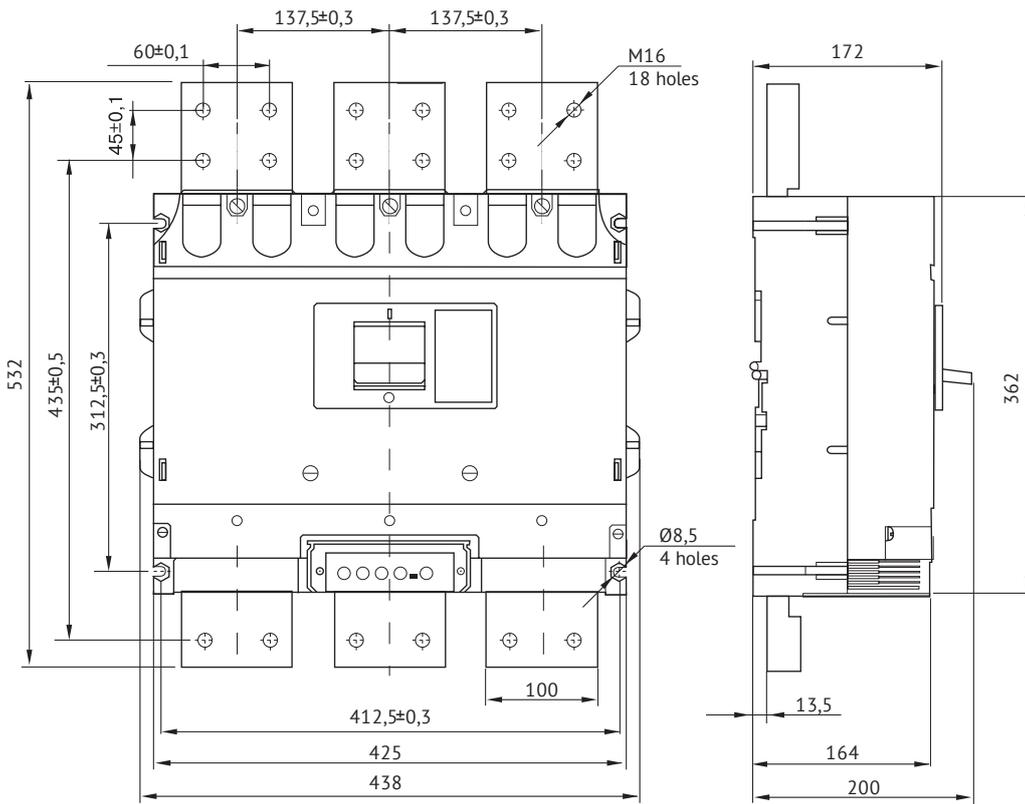
Retractable versions of VA53-41 and VA55-41 circuit breakers with Remote manual drive for control through the door for rated currents 250 A, 400 A, 630 A, 1000 A



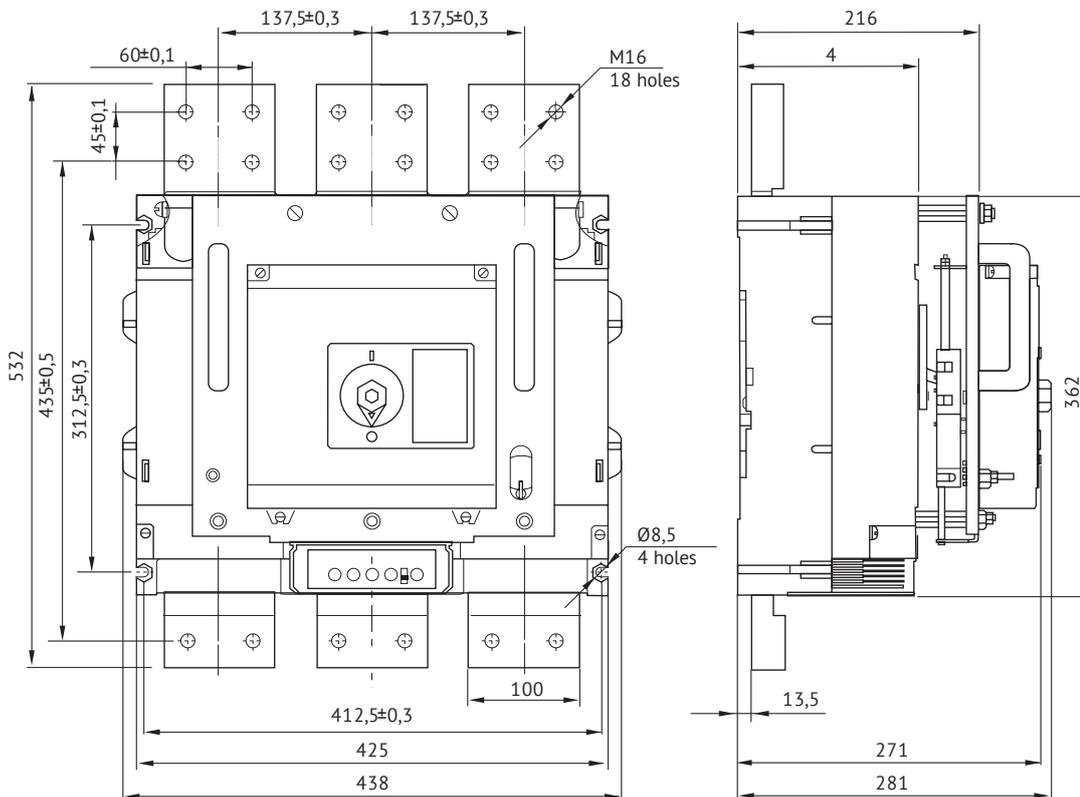
- 1 - frame; 2 - circuit breaker;
- 3 - cabinet door; 4 - control handle.

* Dimensions in brackets are indicated for the "Disconnected" position.

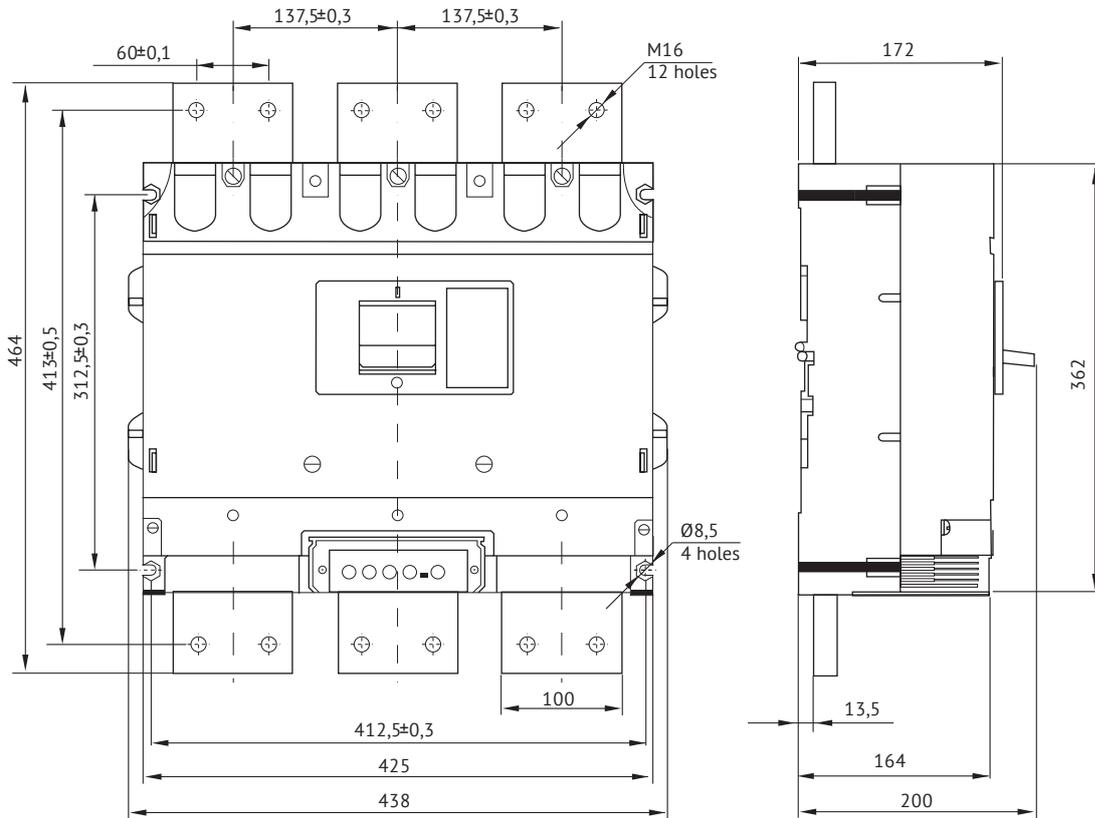
VA53-43 and VA55-43 with manual drive for rated current 2000 A



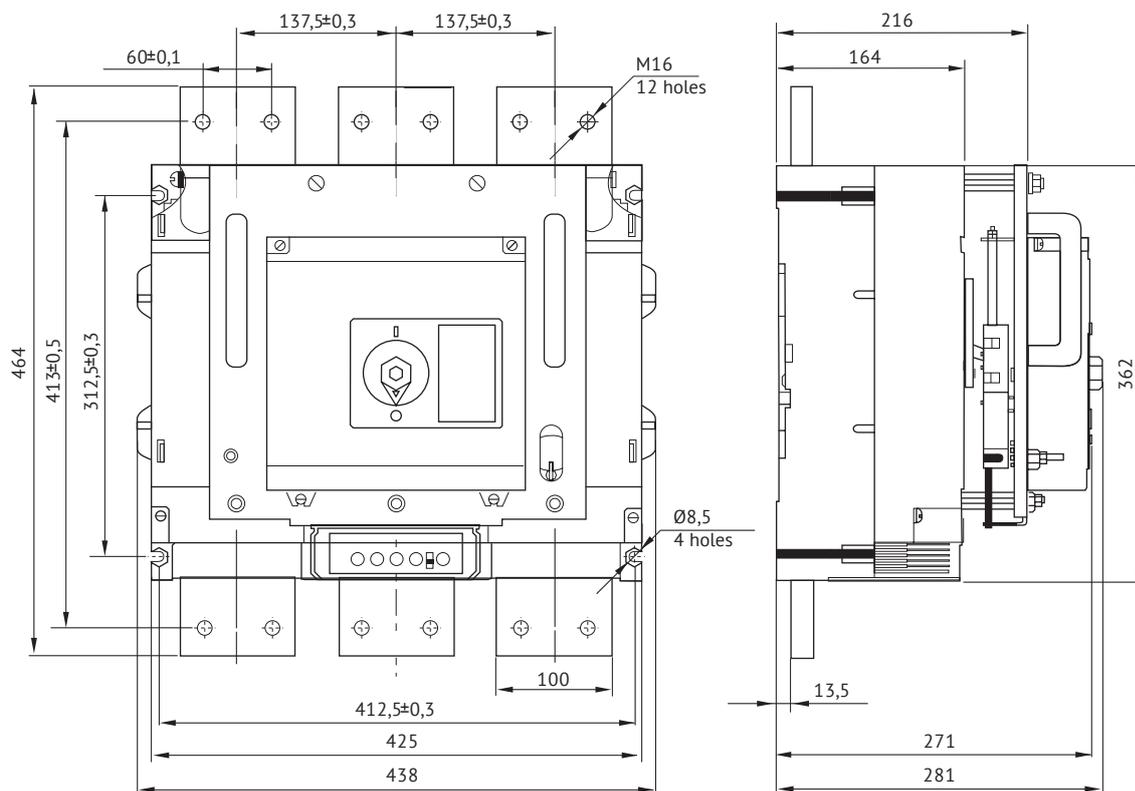
VA53-43 and VA55-43 with electromagnetic remote drive for rated current 2000 A



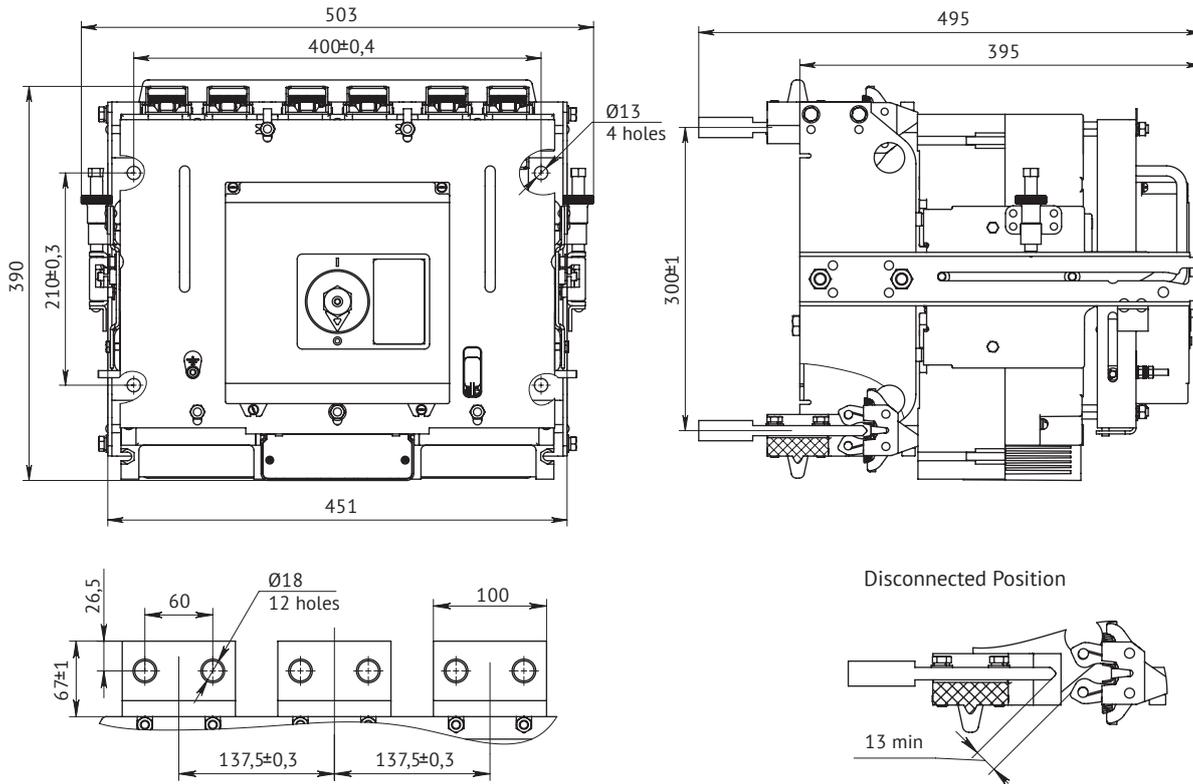
VA53-43 and VA55-43 with manual drive for rated current 1600 A



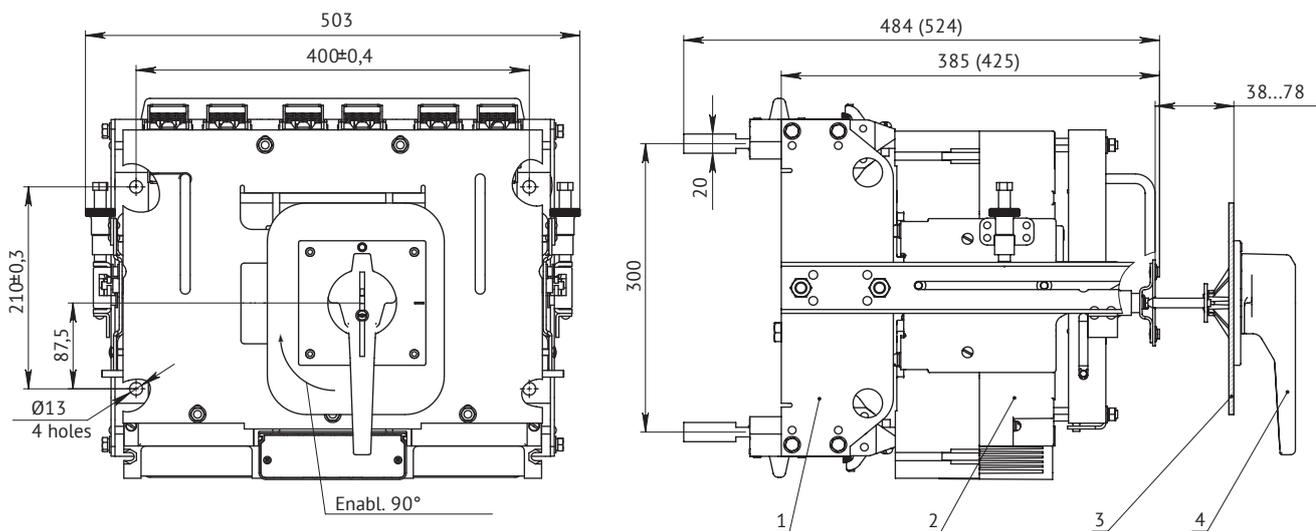
VA53-43 and VA55-43 with electromagnetic remote drive for rated current 1600 A



Retractable versions of VA53-43 and VA55-43 circuit breakers with electromagnetic remote drive for rated current 1600 A



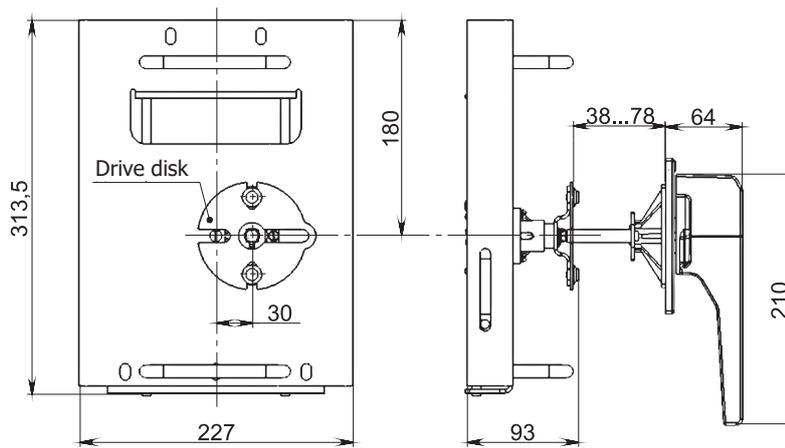
Retractable versions of VA53-43 and VA55-43 circuit breakers with a Remote manual drive to control through the door of the low-voltage switchgear NKU with rated current 1600 A



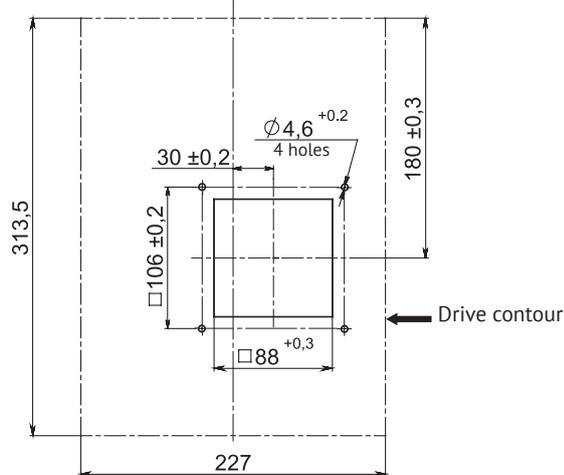
- 1 - frame;
- 2 - automatic switch;
- 3 - cabinet door;
- 4 - control handle.

* Dimensions in brackets are indicated for the "Disconnected" position.

Remote manual drive to control the automatic circuit breakers VA55-41 and VA53-41 through the door of the NKU

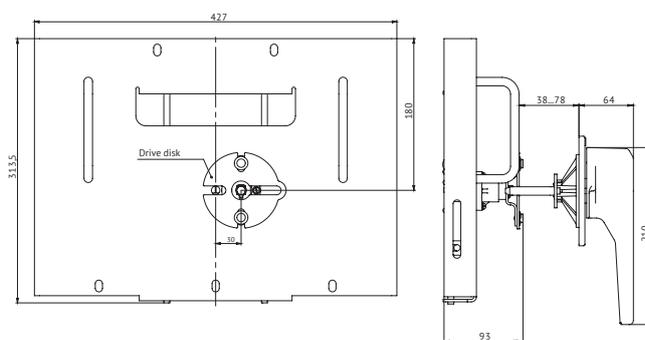


Overall dimensions of manual remote drive

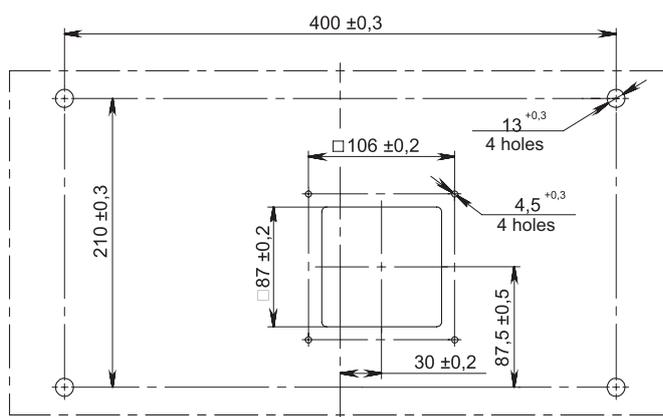


Making holes to install the handle on the NKU door relative to the contour of the drive.

Remote manual drive to control the automatic circuit breakers VA55-43 and VA53-43 through the door of the NKU



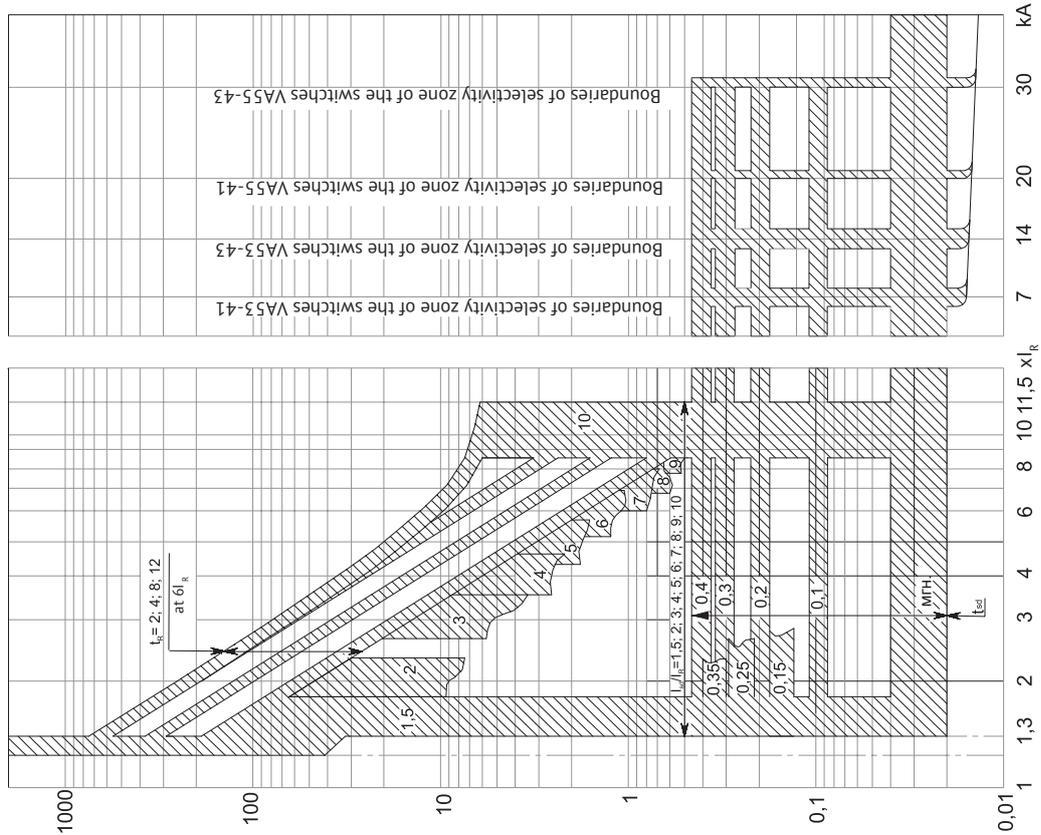
Overall dimensions of the remote manual drive



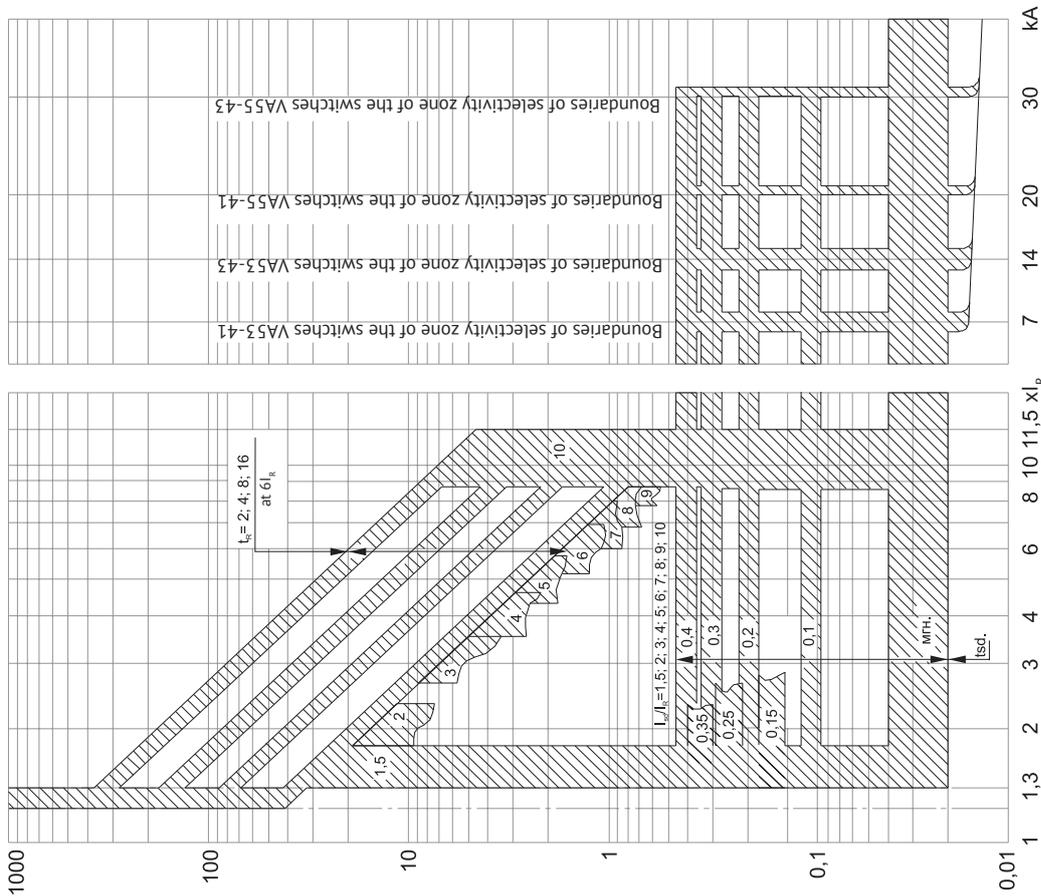
Making holes to install the handle on the NKU door relative to the contour of the drive.

Time-current characteristics

Inverse cubic dependence

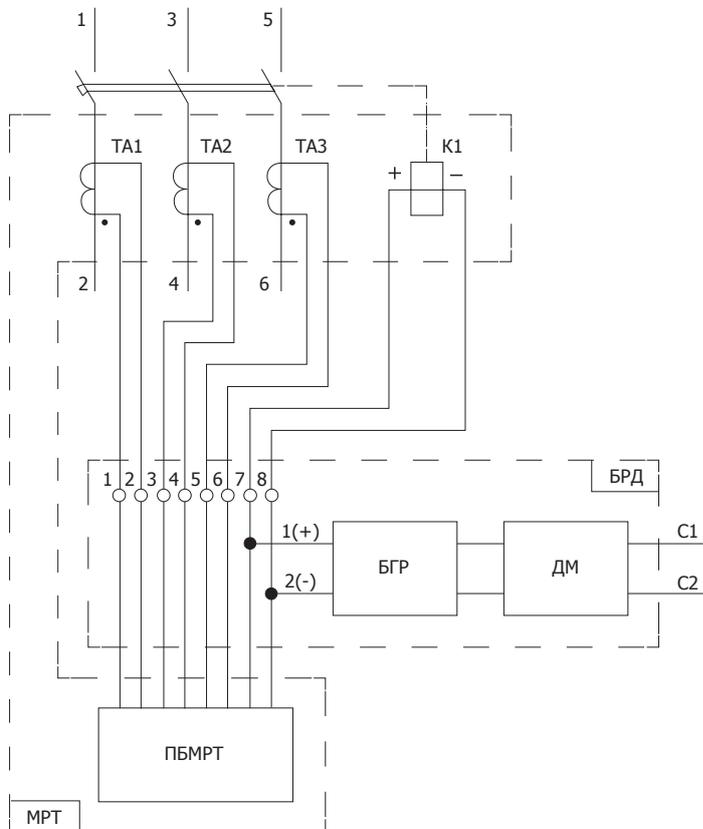


Inverse quadratic dependence



Circuit schematics

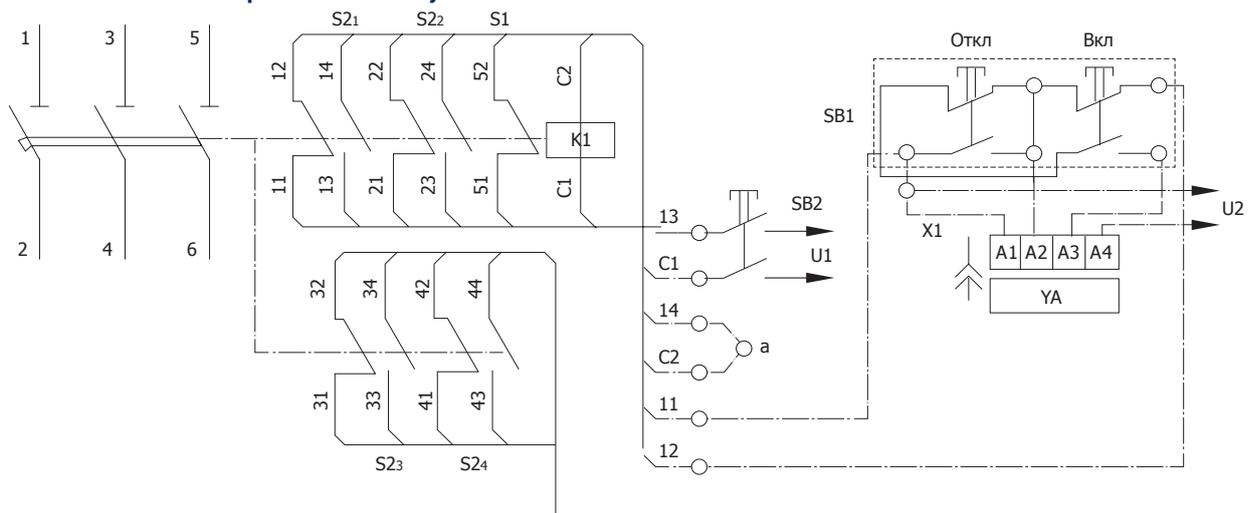
Circuit breaker



Designations adopted in the schemes:

- БРД** - block of resistors and diodes;
- МРТ** - maximum current release;
- БГР** - block of damping resistors;
- ДМ** - diode bridge;
- ПБМРТ** - microprocessor unit for maximum current release;
- S1** - signal contact;
- S2₁; S2₂; S2₃; S2₄** - auxiliary contacts;
- K1** - independent release;
- SQ1, SQ2** - limit switches of the electromagnetic drive;
- ТА** - current transformer;
- YA** - electromagnetic drive;
- U1** - supply voltage of the independent release;
- U2** - supply voltage of the electromagnetic drive;
- YA1, YA2** - electromagnets of an electromagnetic drive;
- SB1** - pushbutton switch of the electromagnetic drive;
- SB2** - pushbutton switch of the independent release;
- X1** - connector RP10-7 6PO.364.025 TY;
- X2** - connector RP10-22 6PO.364.025 TY;
- VD** - diode;
- Откл** - switching off;
- Вкл** - switching on;
- a** - connection is made by the consumer.

Circuit breaker with optional assembly units

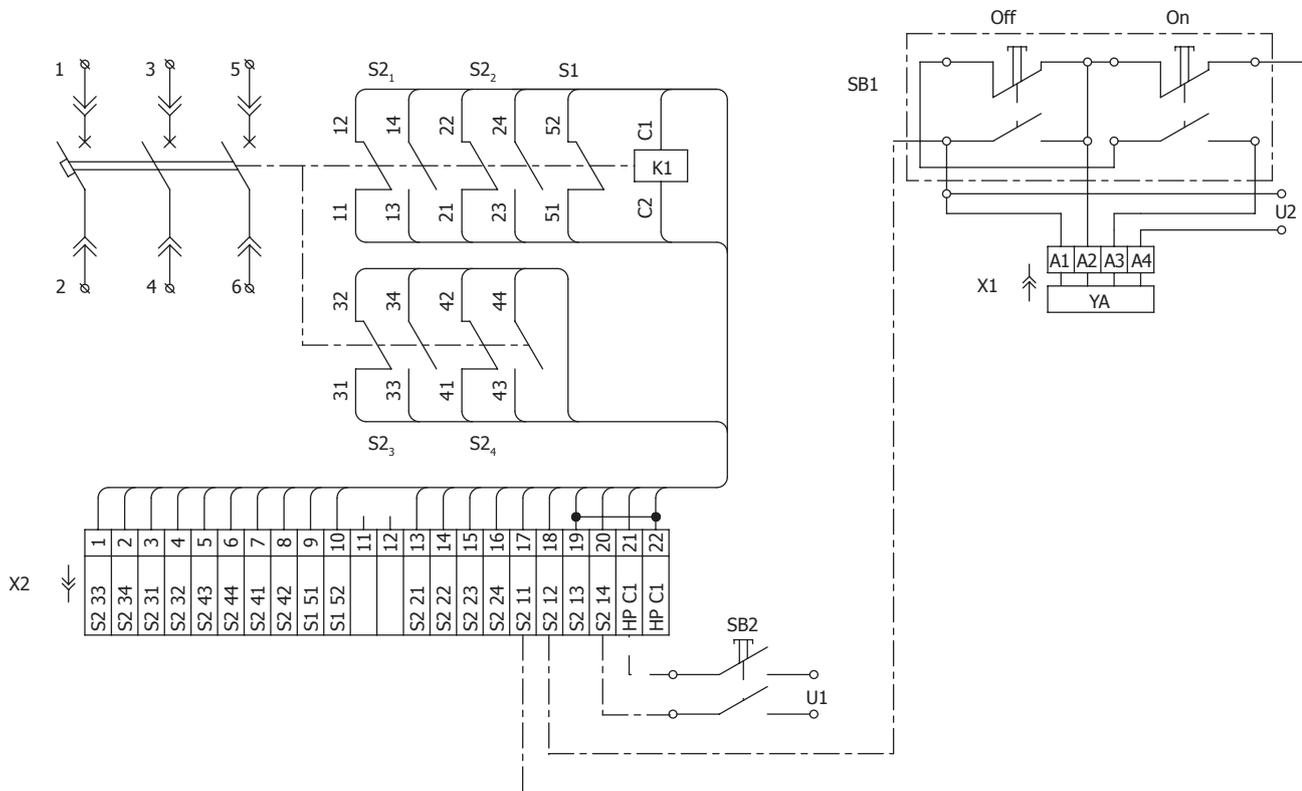


The circuit of signal contacts S1 are given for the breaker in the switching position "Disconnected automatically".

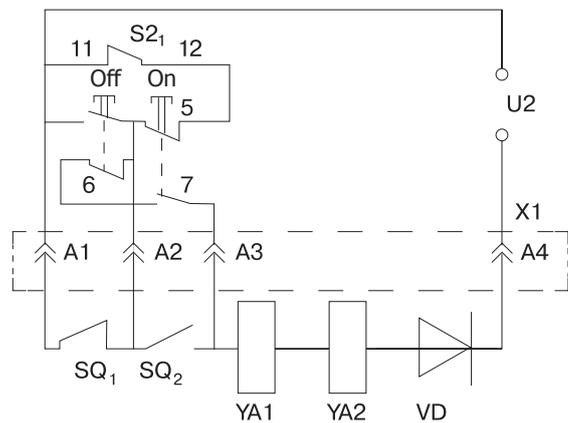
Position of auxiliary and signal contacts

Contact	Disconnected status	Auto Disconnected status	Disconnected manually status
VA53, VA55			
S21 11-12	open	closed	closed
S21 13-14	closed	open	open
S22 21-22	open	closed	closed
S22 23-24	closed	open	open
S23 31-32	open	closed	closed
S23 33-34	closed	open	open
S24 41-42	open	closed	closed
S24 43-44	closed	open	open
S1 51-52	open	closed	open

Retractable circuit breaker with optional assembly units

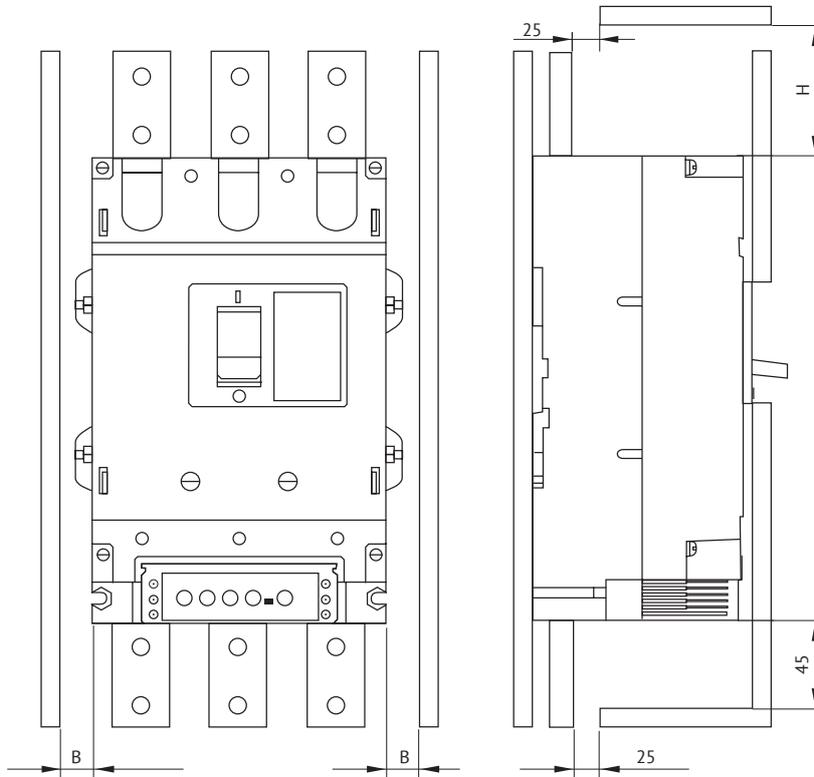


Electromagnetic drive

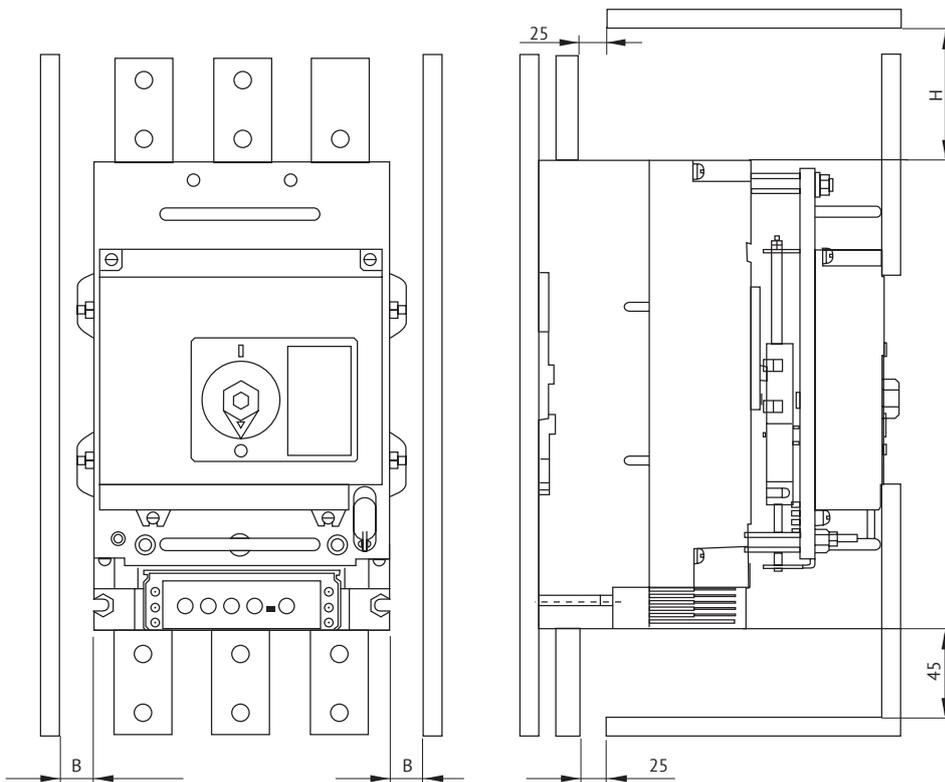


Minimum allowed distances from circuit breaker to the switchgear metal parts

VA53-41 and VA55-41 circuit breakers with the manual drive

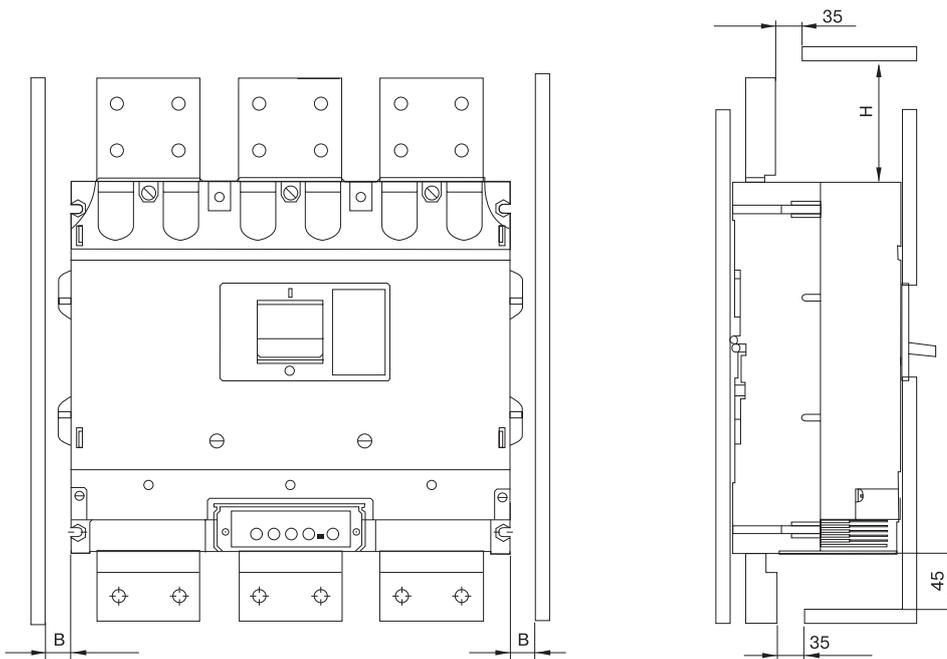


VA53-41 and VA55-41 circuit breakers with the EM drive



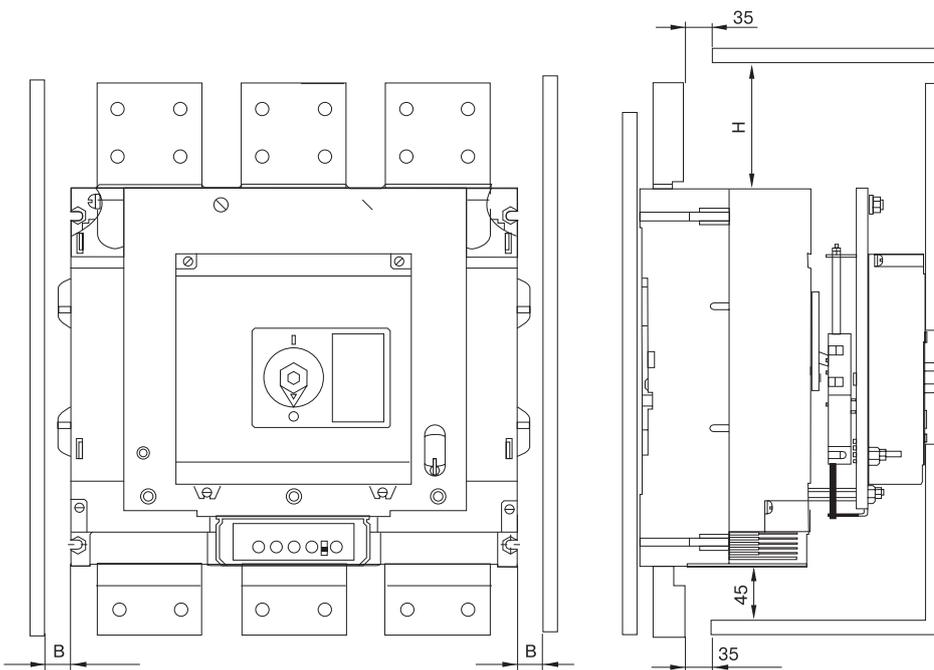
Rated voltage, V	Dimensions, mm	
	B	H
400	50	155
690	60	200

VA53-43 and VA55-43 circuit breakers with the manual drive



Номинальное напряжение, В	Размеры, мм	
	В	Н
400	50	155
690	60	200

VA53-43 and VA55-43 circuit breakers with the EM drive



Rated voltage, V	Dimensions, mm	
	B	H
400	50	155
690	60	200