

[www.efgelektrik.com](http://www.efgelektrik.com)



Our understanding of production and quality together with the experience brought by knowledge in our business life; By transferring it to the production of medium voltage switchgear products and compact transformer centers, we adopt an innovative approach in the electromechanical manufacturing industry and sales point, and we proudly continue to contribute to our principle by directing the sector with certified R&D studies.

Our company, which carries out the production of industrial products necessary for the production and transmission of electricity in the energy sector, by following the developing technology closely, continues to comply with the requirements of the management systems standards, within the framework of an understanding that gives importance to continuous improvement of its efficiency, by paying attention to meeting customer expectations and needs.

Our national value-based business culture, our business philosophy that encourages continuous improvement, and optional and functional excellence with the right planning are among the factors that play the most effective role in making EFG Electric different from its competitors.

Our main aim is to provide high quality products to our customers by following technological developments closely, to improve our production capacity and to maximize customer satisfaction with our after-sales service quality. EFG Electric, which has all the necessary quality certificates, continues its production with the awareness that the products it produces are used wherever there is electricity. Our expert and technical staff, who attach importance to quality and are open to development, continue their work meticulously with all their strength.





ASSURANCE

# MV MODULAR SWITCHGEAR



EFG brand Air Insulated Metal Enclosed Switchgears are a group of switchgear and control devices designed according to TS EN 62271-200 [IEC 62271-200] standard for use in medium voltage distribution systems up to 36 kV. All type tests required by the standard have been completed in accredited laboratories in Turkey and abroad. There are different types of cell designs with the functional features needed for MV distribution systems.

## STRUCTURAL ADVANTAGES

- ⚡ Suitable for remote monitoring and control systems.
- ⚡ Safe making and breaking operations with EFG brand SF6 Gas Disconnectors, SF6 Gas Load Break Switch and SF6 Gas Circuit Breaker.
- ⚡ Comfortable and safe use in MV Distribution Transformer Substations [Concrete Enclosed Monoblock Substations, Sheet Metal Enclosed Monoblock Substations] with compact dimensions.
- ⚡ Expandability to the right and left in accordance with the modular construction logic, easy assembly and disassembly.

## LOCKING SYSTEMS

### Locking patterns in load break switch cells;

- ⚡ The load disconnectors can be closed if the earthing switch is open and the openable cover of the cell is closed.
- ⚡ Earthing switch can be closed if the disconnector is open.
- ⚡ The breaker can be closed if the disconnector is closed, the earthing switch is open and the cell's openable cover is closed.



# STRUCTURAL AND DESIGN FEATURES

## METAL ENCLOSED

EFG brand Air Insulated Metal Enclosed Switchgears are 2 mm thick, ready-made galvanized sheet material is used on all external surfaces of. The covers and doors on the front of the enclosure, the front panels of the operating mechanism sections are painted with electrostatic powder paint method. The enclosure has an IP3X degree of protection against people approaching live parts and touching moving parts.

## DOORS AND COVERS

In the EFG Switchgears, access to sections with electrical wiring, voltage and voltage transformers and fuses can be done with the OPEN cover and works. FIXED caps, on the other hand, are OPENING caps from the use of any tools and have a "DANGER" warning sign on them.

## SURVEILLANCE WINDOWS

The open and closed positions of the earthing disconnecter, current-voltage transformers, insulator cable heads and circuit breaker in the accessible section on the switchgear can be seen through the observation windows on the covers in this section.

## MAIN BUSBAR SECTION

It is located at the top of the cell. The main busbar terminals of the cubicles, which are mounted side by side as modular, are combined with copper or aluminum busbars to form the main busbar. Access to the main busbar section is only possible by removing the cover with the warning sign on it.

## CABLE CONNECTION SECTION

It is located at the bottom of the cell. It is the section where the medium voltage cables/busbars entering and leaving the cubicle are connected to the cubicle. The cover of this section can be opened without using any tools after all conductors entering the section are de-energized and after short-circuited and grounded.

Elements in the cable connection section according to the cell functional feature;

-  Circuit Breaker
-  MV fuses
-  Earthing switches
-  Measuring transformers

# SWITCHGEAR SECTIONS

## LOW VOLTAGE [LV] SECTION

The cell is located on its upper anterior surface. This section can be accessed while the system is under voltage. Elements in the low voltage section according to the cubicle functional properties;

-  Protection relays, Measurement tools, Counters, Auxiliary relays, LV fuses
-  Terminal array and other low voltage control and command devices

## OPERATING MECHANISM SECTION

It is located in the cell under the AG Section. It is a metal-enclosed section with IP3X protection degree, where the load disconnecter, gas disconnecter and grounding operating mechanisms are located. In switchgear cells, the working mechanism is located on the cutter. The operating mechanism section is accessible when the system is under voltage.

The following equipment is available in accordance with the single line diagram on the control and monitoring panel on the front of the operating mechanisms;

-  Mimic diagram
-  Position indicators of disconnecter, load disconnecter and earthing switches
-  Joystick slots to be controlled for disconnecter and earthing switch
-  "Spring Set" and "Spring Empty" symbols
-  Load disconnecter on and off buttons
-  Voltage indicator and phase sequence control socket
-  Operating instruction
-  Nameplate

# ISSUES TO BE CONSIDERED IN CHOOSING FUSES

- ⚡ The fuse rated voltage must be equal to or greater than the rated voltage of the system.
- ⚡ The right fuse should be selected according to the characteristics determined by the fuse manufacturer. Fuses to be used in EFG brand Transformer Protection Switchgears with Load Disconnectors and Fuses must be striker pin [middle type] according to TS EN 60282-1 standard.
- ⚡ The Cable Connection Section cover, where the MV fuses are located, can be opened after the load disconnector is opened and both sides of the medium voltage fuses are grounded.
- ⚡ MV fuses must be inserted in their slots with the striker pin side up [in the direction of the arrow].
- ⚡ In the article 8.103 of the standard numbered TS EN 62271-105, it is recommended to replace the fuses in other phases in case one or two fuses blow [melt] in a Switchgear and Fused Cell.

**MV FUSE  
SECTION**



FUSE SELECTION CHART		TRANSFORMER RATED VOLTAGE [36 kV]	
		EFO	INTERTECHNICAL
TRANSFORMER RATED POWER [kVA]	U <sub>k</sub> %	FUSE RATED CURRENT [A]	
25	4,5	2	2
50	4,5	4	4
100	4,5	6	6,3
160	4,5	10	10
200	4,5	10	10
250	4,5	10	16
400	4,5	16	16
630	4,5	20	31,5
800	6	25	40
1000	6	25	40
1250	6	40	50
1600	6	50	63

# STANDARD AND OPTIONAL EQUIPMENT



## **CURRENT AND VOLTAGE TRANSFORMERS**

Two different types of current transformers, toroidal type and support type, are used in EFG brand switchgears. Different types of current and voltage transformers are used in line with customer requests and project needs.

## **FAULT INDICATOR ASSEMBLY**

Fault Indicator Mechanism, which shows phase and earth faults supplied from different suppliers, is optionally offered with switchgears.

## **DIGITAL PROTECTION AND CONTROL RELAYS**

Relays with different types of protection, measurement and control features are used in line with customer requests and project needs. After the desired setting values are loaded on the relays installed in the cell, they are shipped.



## MEASUREMENT TOOLS

The selection of measuring instruments such as ammeter, voltmeter, meter and energy analyzer is made in line with customer and project needs.

## MV FUSES

High breaking capacity MV fuses selected according to transformer power are used in EFG brand switchgears.

## REMOTE CONTROL

With the remote control offered as a standard in EFG brand cells, operations on the cell can be performed up to a distance of 5 meters.

## BUSBARS

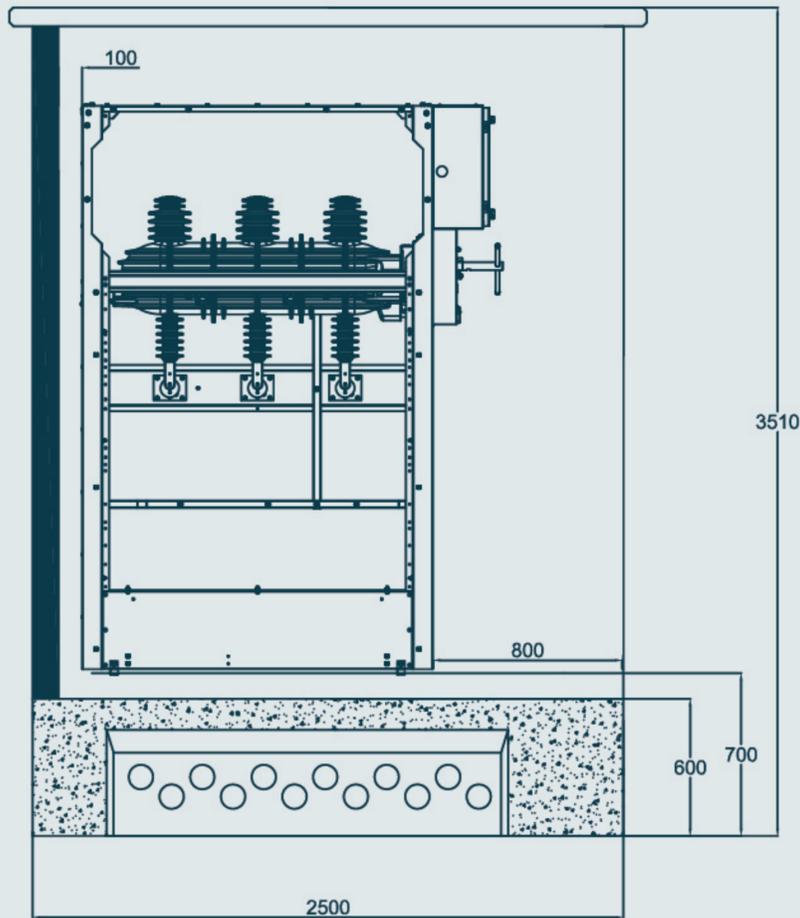
The busbars used in the inter-cell connections are produced from aluminum or copper insulated with a shrink tube with high conductivity capacity.

# TECHNICAL CHARACTERISTIC

RATED VOLTAGE	36 kV	24 kV
RATED CURRENT [A]	630 - 1250* A	630 - 1250* A
RATED NETWORK FEREQUENCY WITHSTAND VOLTAGE	70 kV	50 kV
RATED LIGHTING IMPULSE WITHSTAND VOLTAGE	170 kV	125 kV
RATED FREQUENCY	50 Hz	50 Hz
NOMINAL SHORT CIRCUIT CURRENT	16 kA	16 - 25 kA
RATED PEAK WITHSTAND CURRENT	40 kA	40 - 63 kA
INTER NAL ARC CLASS	AFL	AFL
LOSS OF SERVCE CONTINUITY	LSC2A-PI	LSC2A-PI
PROTECTION CLASS	IP 3X	IP 3X
APPLIED STANDARD	TS EN 62271-200	TS EN 62271-200

\*Does not apply to cells with load breakers.





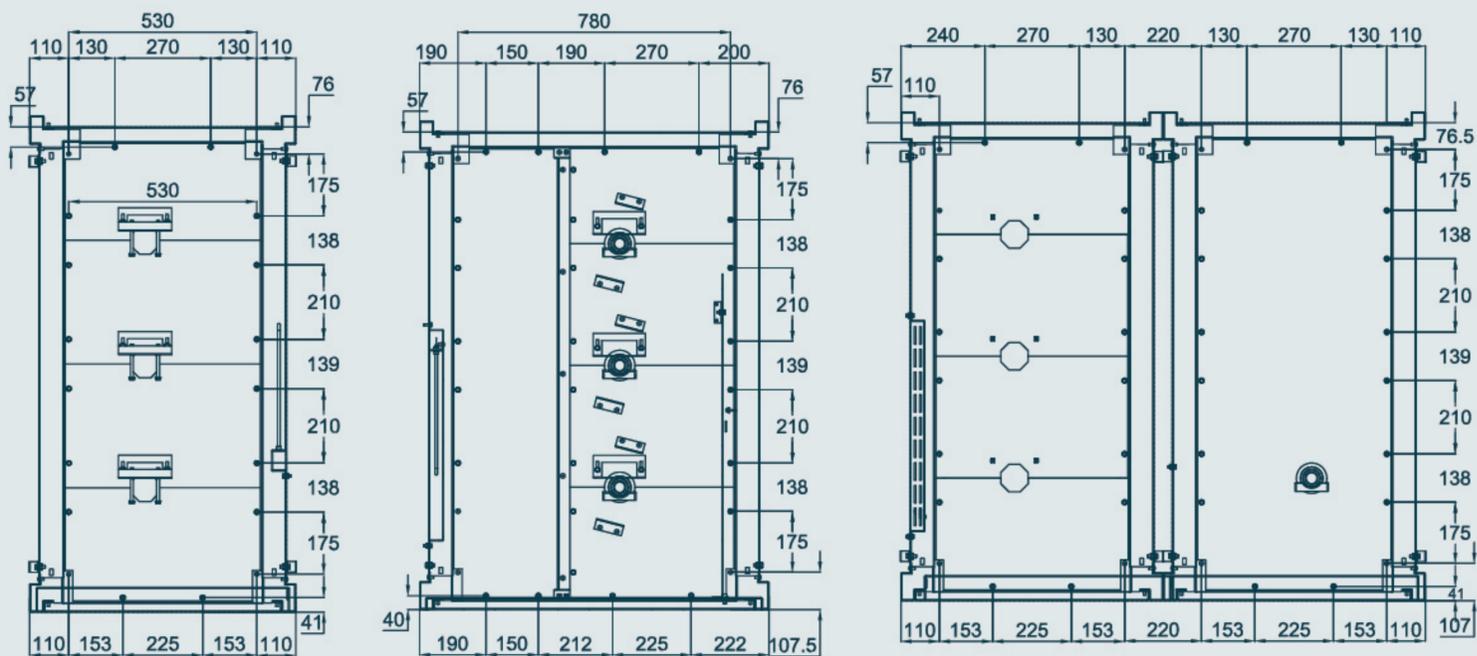
## ASSEMBLY

### ASSEMBLY CELL PLACEMENT

AS36 series switchgears should be placed on a cable duct in the building, taking into account the dimensions given below.

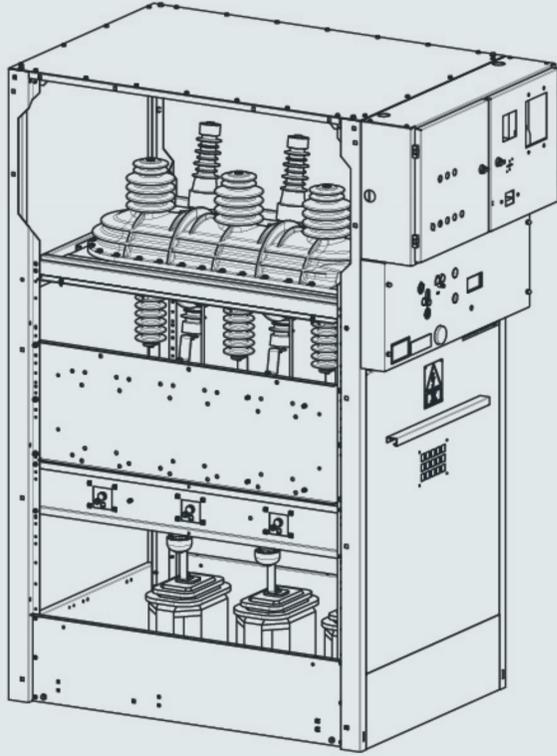
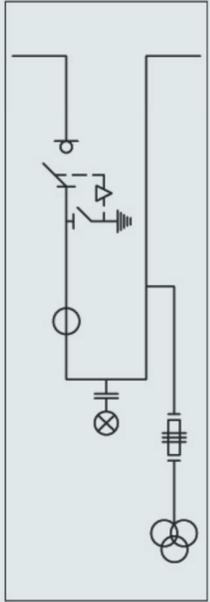
### IMPORTANT

The distance of the cells must be 100mm minimum from the Wall.



## FIXING THE CELLS TO THE FLOOR

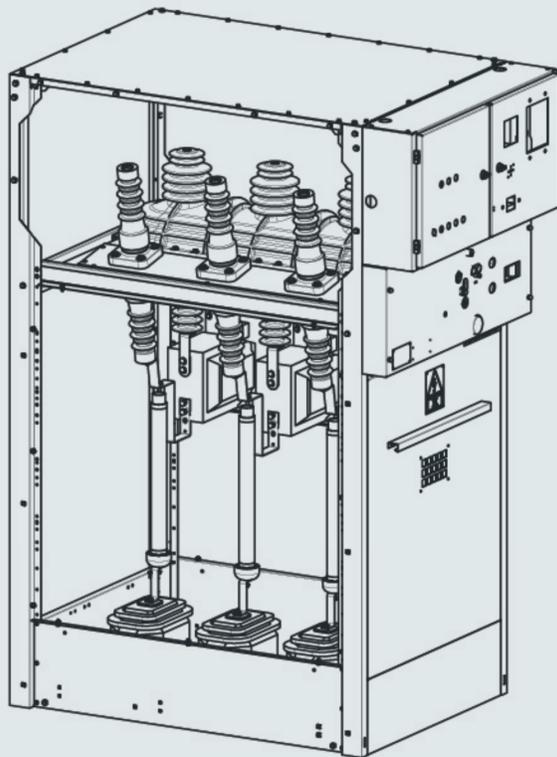
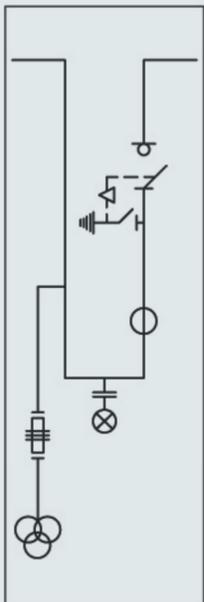




**AS36 - 24 LCV**  
**Current Voltage Measuring Switchgear**  
**with Load Disconnecter**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	1000	750
<b>Depth</b>	1400	1000

**TYPE OF**

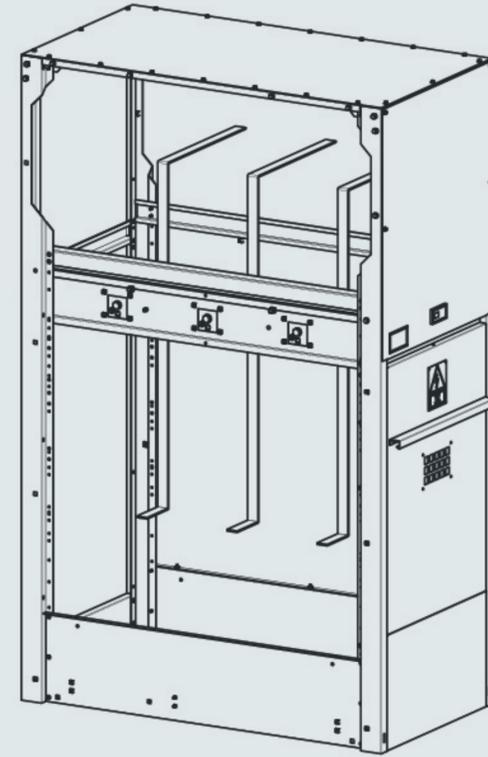


**AS36 - 24 LCV2**  
**Current Voltage Measuring Switchgear**  
**with Load Disconnecter (Right Input)**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	1000	750
<b>Depth</b>	1400	1000

AS36 - 24 KB  
Cable Binding Switchgear

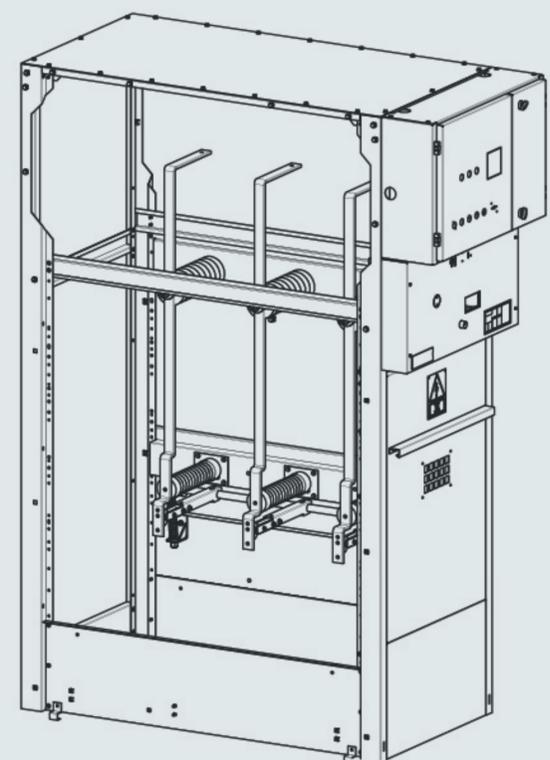
Un [kV]	36 kV	24 kV
Height	2250	1800
Width	750	500
Depth	1400	1000



# SWITCHGEARS

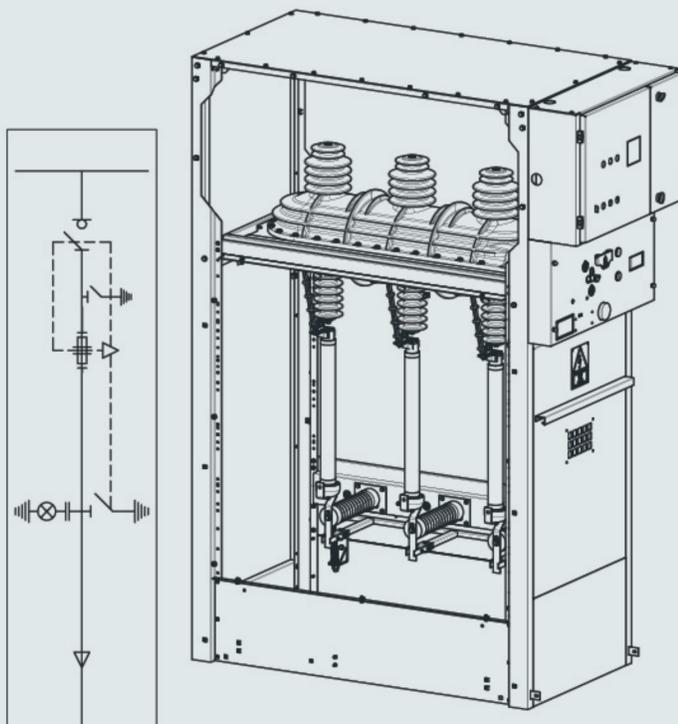
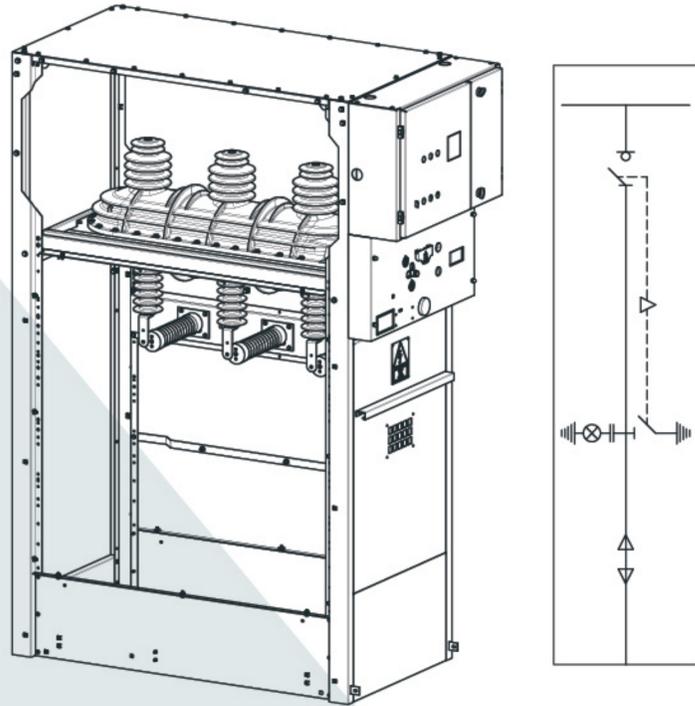
AS36 - 24 KB  
Cable Binding Switchgear with Grounding

Un [kV]	36 kV	24 kV
Height	2250	1800
Width	750	500
Depth	1400	1000



**AS36 - 24 LC/LC-M**  
**Input-Output Switchgear with**  
**Load Break Switch**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	750	500
<b>Depth</b>	1400	1000

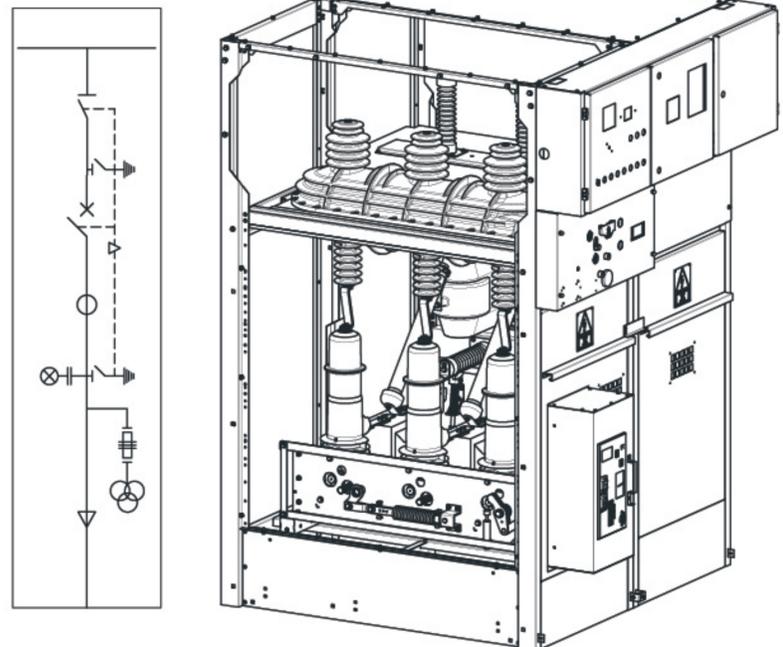


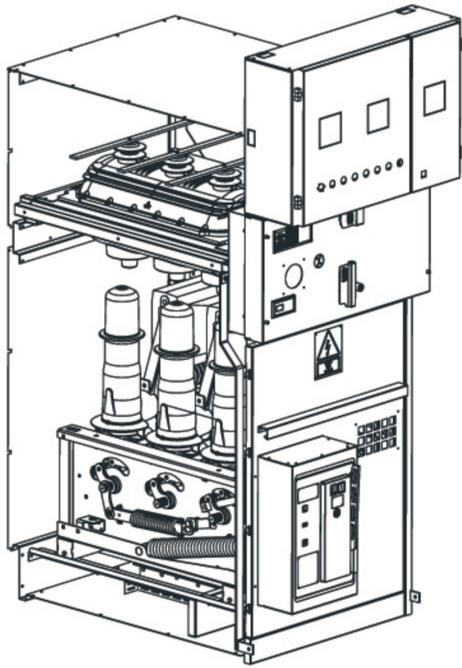
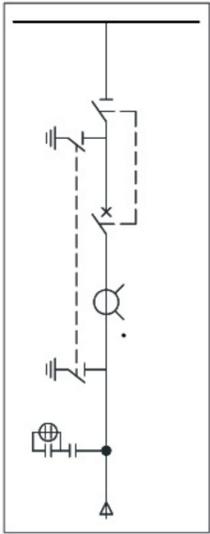
**AS36 - 24 LF**  
**Fused Transformer Protection Switchgear**  
**with Load Break Switch**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	750	500
<b>Depth</b>	1400	1000

**AS36 - 24 CBC-OTOP**  
**Autoproducer Switchgear**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	1500	1000
<b>Depth</b>	1400	1000



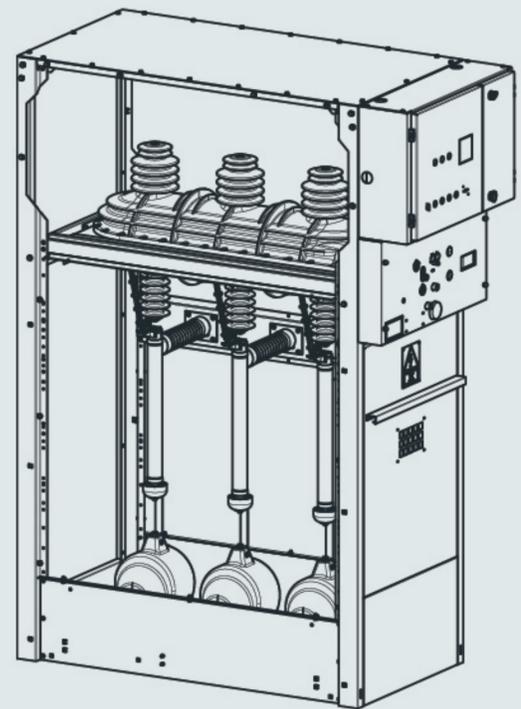
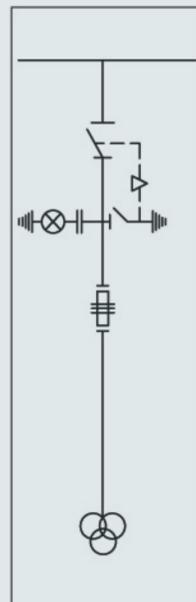


**AS36 - 24 CBC**  
**Input-Output Switchgear with**  
**Circuit Breaker**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	1000	750
<b>Depth</b>	1400	1000

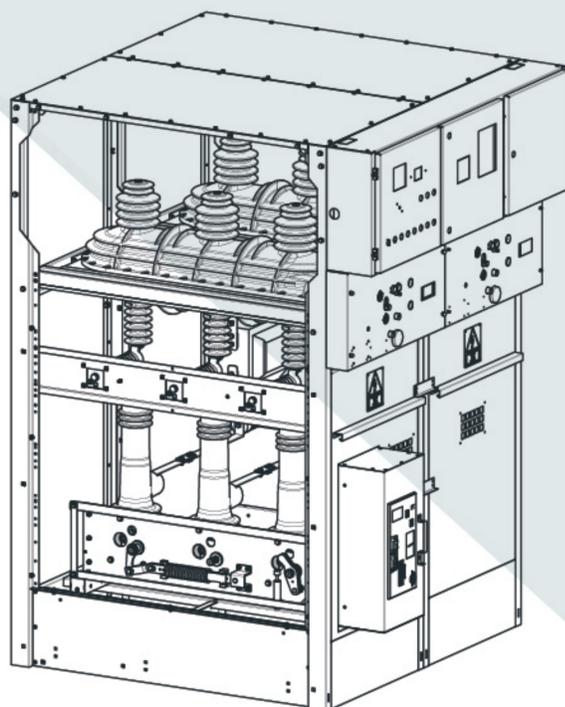
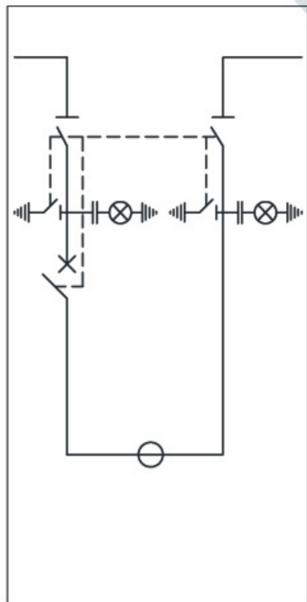
**AS36 - 24 VTC - VTC/2**  
**Voltage Measurement Switchgear**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	750	500
<b>Depth</b>	1400	1000



**AS36 - 24 CBC-C2**  
**Coupling Switchgear with Circuit Breaker**

<b>Un [kV]</b>	36 kV	24 kV
<b>Height</b>	2250	1800
<b>Width</b>	1500	1500
<b>Depth</b>	1400	1000



# SF6 GAS CIRCUIT BREAKER

EFG brand SF6 Gas Circuit Breakers are designed in a sealed pressure structure that does not require SF6 gas supplementation for 30 years, in accordance with TS EN 62271-100 standard.

## Working Mechanism

The breaker operating mechanism works with the energy accumulated in a spring arrangement, which provides an "On-Off-On" operation cycle without the need for a separate operation, suitable for the remote control system, can be set up by hand or with a motor. The closing spring is installed by the electric motor, and the opening spring is installed automatically when the breaker is closed. There is a locking system that prevents the breaker from operating if the closing spring is not fully installed.

## Opening and Closing Patterns

Opening and closing operations can be done remotely with the help of opening and closing coils and also mechanically with the button on the front of the breaker operating mechanism in case of emergency. There is a mechanical indicator showing the open and closed states of the breaker on the operating mechanism and a mechanical counter that records the number of openings.





<b>TYPE</b>	<b>ARM-36-G-01</b>	<b>ARM-24-G-01</b>
<b>RATED VOLTAGE</b>	36 kV	24 kV
<b>INSULATION VOLTAGE</b>	70 kV [factor-1 min]	50 kV [factor-1 min]
<b>LIGHTNING IMPULSE VOLTAGE</b>	170 kV [peak -1.2-50µs]	125 kV[peak -1.2-50µs]
<b>RATED CURRENT</b>	630 A	630 A
<b>RATED FREQUENCY</b>	50 Hz	50 Hz
<b>SHORT CIRCUIT CURRENT</b>	16 kA	16 - 20 kA
<b>PEAK STRENGTH CURRENT</b>	40 kA	40 - 50 kA
<b>SHORT TIME</b>	3 sec.	3 sec.
<b>GAS SEAL TYPE</b>	Sealed pressure	Sealed pressure
<b>CLASS</b>	E1, C2, M2	E1, C2, M2
<b>WORKING CYCLE</b>	A-0,3 sec-KA-3 min-KA	A-0,3 sec-KA-3 min-KA

»» ARM-36-G-01 TYPE  
36kV 630A 16kA

»» ARM-24-G-01 TYPE  
24kV 630A 16kA



# VACUUM CIRCUIT BREAKER

ARM Type Vacuum Breakers are one of the main equipment of medium voltage air insulated switchgears. Vacuum breakers have a high ability to extinguish arcs that may occur during opening and closing. Therefore, it has found a wide application area in medium and high voltage systems as arc extinguishing and isolation media. Type tests of Vacuum Breakers manufactured at 36kV rated voltage have been completed in accordance with IEC 62271-100 standard.



CAPABILITY TO WORK SIMULTANEOUSLY WITH LOAD BREAK SWITCH AND INDEPENDENT HAND CONTROL



MAINTENANCE-FREE CONSTRUCTION AND EASY WIRING



TYPE	ARM-36-V-01	ARM-24-V-01
RATED VOLTAGE	36 kV	24 kV
INSULATION VOLTAGE	70 kV [factor-1 min]	50 kV [factor-1 min]
LIGHTNING IMPACT VOLTAGE	170 kV [peak -1.2-50µs]	125 kV[peak -1.2-50µs]
RATED CURRENT	630 - 1250 A	630 - 1250 A
RATED FREQUENCY	50 Hz	50 Hz
SHORT CIRCUIT CURRENT	16 kA	16 - 20 - 25 kA
PEAK WITHSTAND CURRENT	40 kA	40 - 50 - 63 kA
SHORT CIRCUIT DURATION	3 sec.	3 sec.
GAS SEAL TYPE	Sealed pressure	Sealed pressure
CLASS	E1, C2, M2	E1, C2, M2
WORKING CYCLE	A-0,3 sec-KA-3 min-KA	A-0,3 sec-KA-3 min-KA



ARM-36-V-01 TYPE  
36kV 630-1250A 16kA



ARM-24-V-01 TYPE  
24kV 630-1250A  
16-20-25kA

# GROUNDING DISCONNECTOR

AS36 LF series 36kV 16kA 630A load break switch + fuse combination transformer protection switchgears of AS36 LF series produced within EFG Elektrik are designed in accordance with the standards. Necessary type tests of this disconnecter have been carried out in international and national laboratories. Earthing disconnectors with E2 class type test prevent damage to personnel in front of the cubicle thanks to their 5 closing feature on short circuit. Earthing disconnectors are produced as 3-pole in accordance with TS EN 62271-102 standard.



**1kA EARTHING SWITCH**



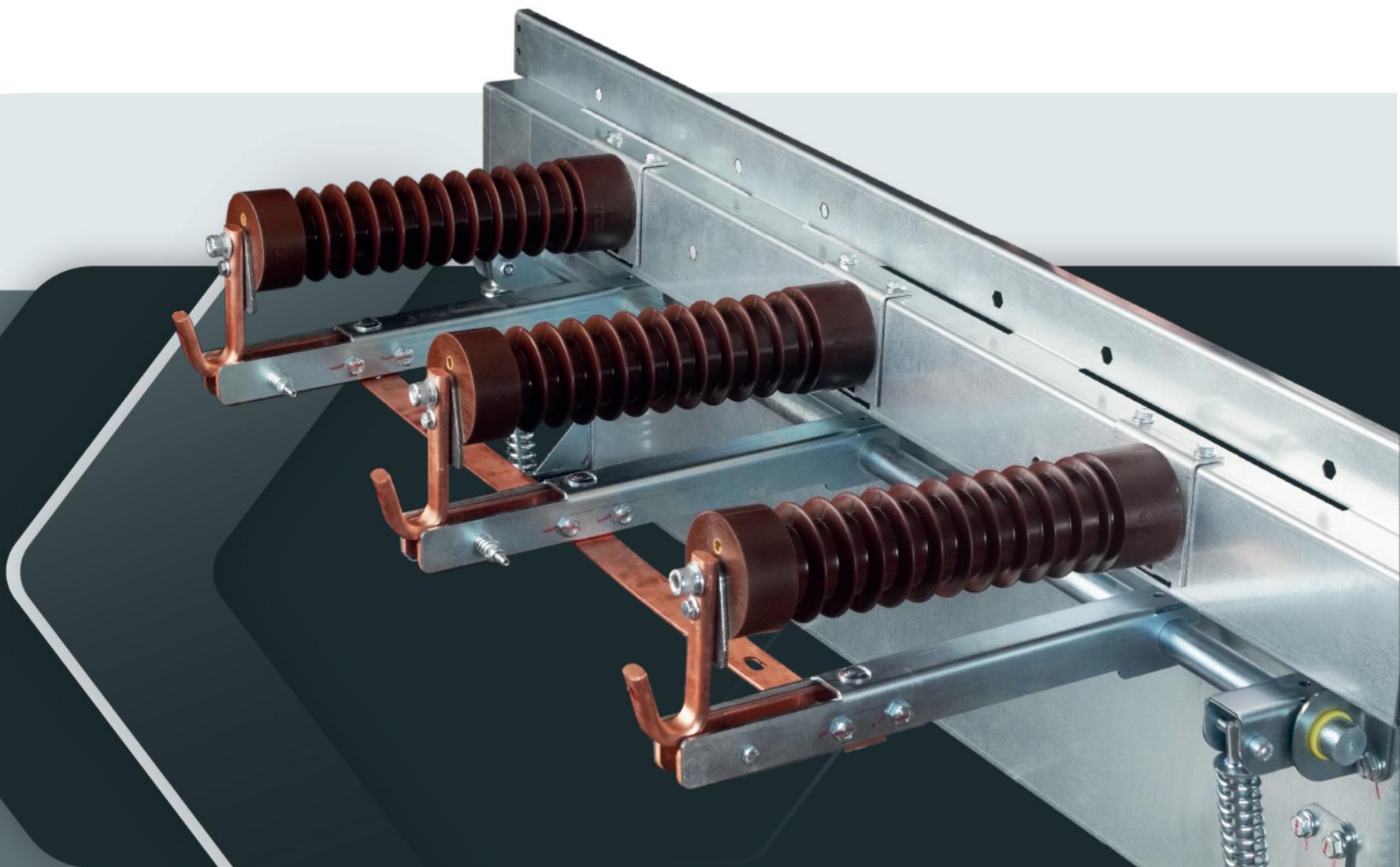
TYPE	AS-1	AS-2	AS16-E2	AS24-E2
RATED VOLTAGE	36 kV	24 kV	36 kV	24 kV
RATED SHORT-TIME WITHSTAND CURRENT	1 kA	1 kA	16 kA	16-25 kA
RATED PEAK WITHSTAND CURRENT	2,5 kA	2,5 kA	40 kA	40-63 kA
RATED SHORT CIRCUIT TIME	1 sec.	1 sec.	1 sec.	1 sec.
CLASS	E2	E2	E2	E2
APPLIED STANDARD	TS EN 62271-102			



CAPABILITY TO WORK SIMULTANEOUSLY WITH LOAD BREAK SWITCH AND INDEPENDENT HAND CONTROL



MAINTENANCE-FREE CONSTRUCTION AND EASY WIRING



16kV EARTHING SWITCH

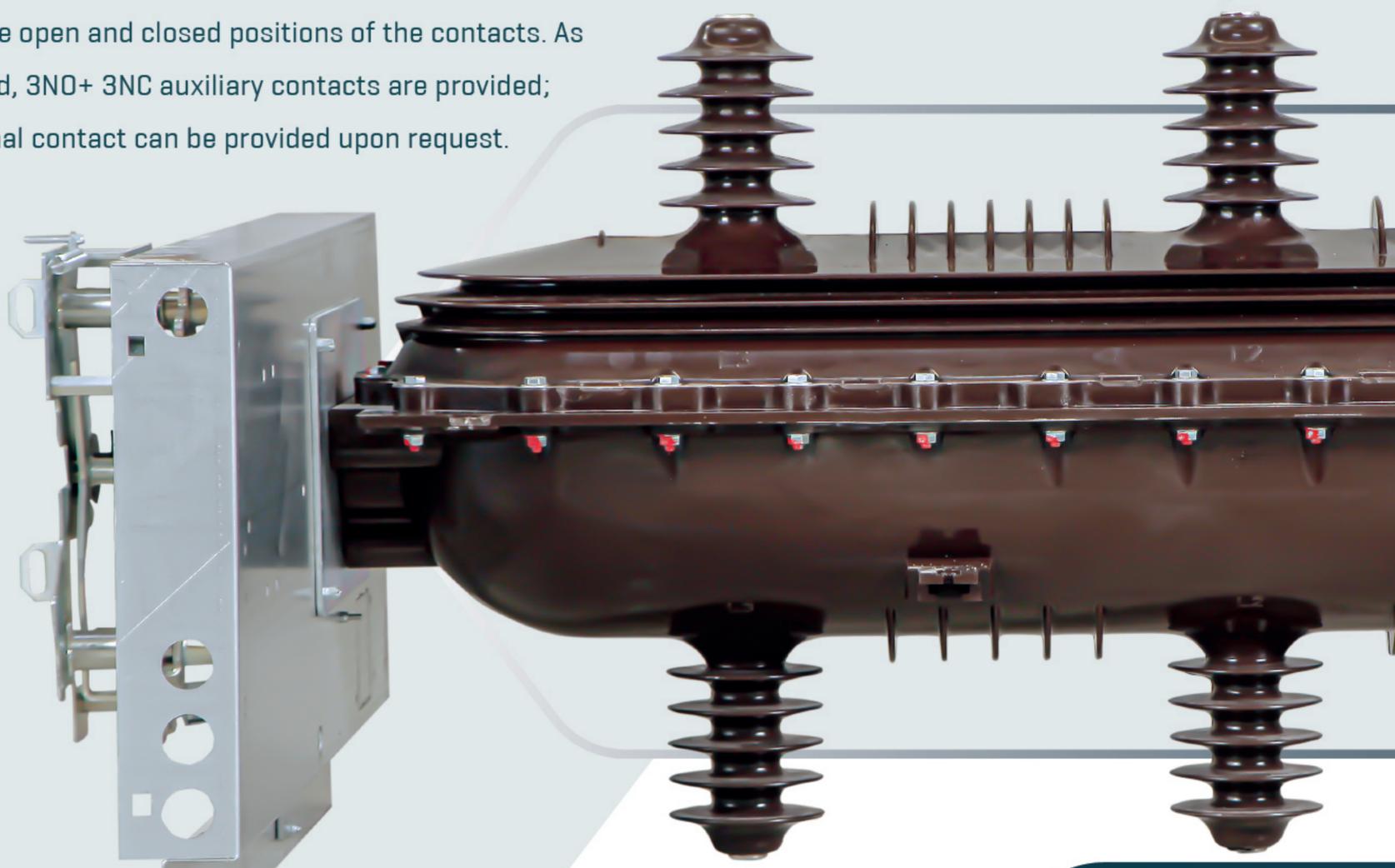


# SF6 GAS DISCONNECTOR

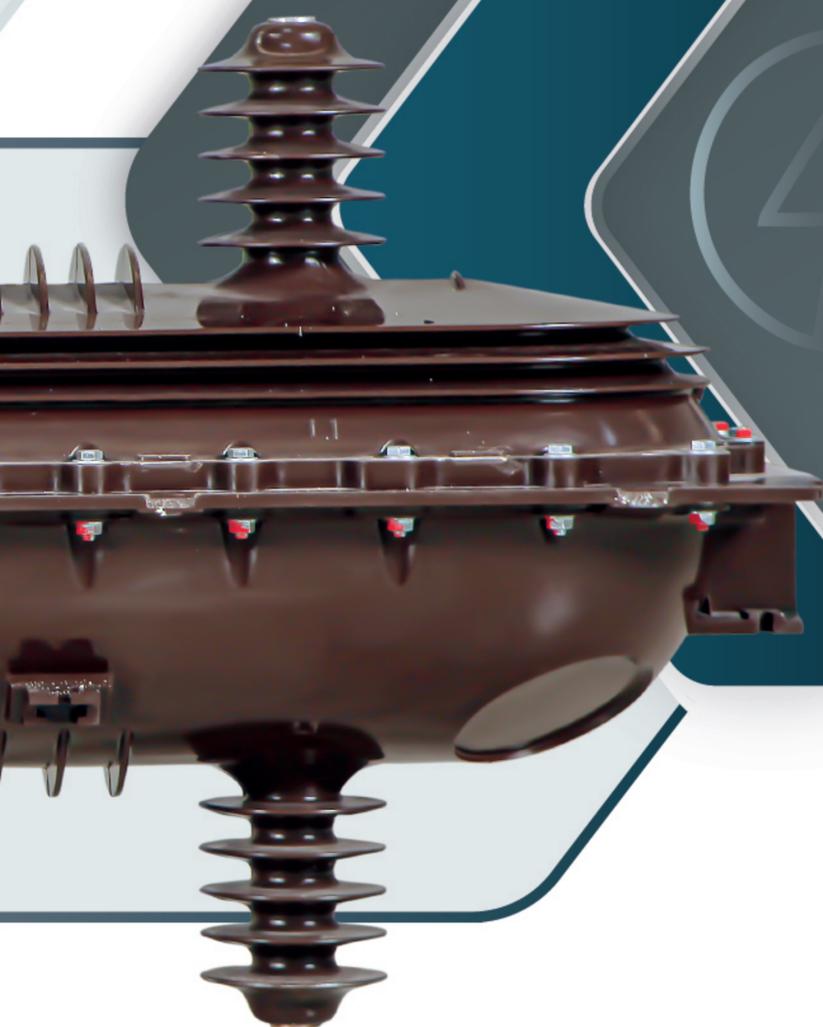
SF6 Disconnectors are sealed in an epoxy resin cast body, with a "sealed pressure system"; It has 3 poles and 3 positions. EFG brand SF6 gas disconnectors, which are offered to the consumer company by filling SF6 gas at 1.4-1.8 bar pressure during the production phase and checking the gas tightness at the production site, are designed in a sealed pressure structure that does not require SF6 gas supplementation for 30 years, in accordance with TS EN 62271 - 102 standard.

In the event that the SF6 gas pressure unexpectedly rises to a dangerous level during operation, a pressure relief valve [weakened area] is located on the rear cover of the separator body to ensure that the gas is discharged in a way that does not pose a hazard to the operating personnel.

Closing and opening operations are performed manually in the EFG brand Gas Separator mechanism. The closing and opening process of the earthing switch is completed depending on the operator's action. The operating mechanism is supervised by position indicators that reliably show the open and closed positions of the contacts. As standard, 3NO+ 3NC auxiliary contacts are provided; Additional contact can be provided upon request.



TYPE	DGA-36-S	DGA-24-S
RATED VOLTAGE	36 kV	24 kV
INSULATION VOLTAGE	70 kV [factor-1 min]	50 kV [factor-1 min]
LIGHTNING IMPULSE VOLTAGE	170 kV [peak -1.2-50µs]	125 kV[peak -1.2-50µs]
RATED CURRENT	630 - 1250 A	630 - 1250 A
RATED FREQUENCY	50 Hz	50 Hz
SHORT CIRCUIT CURRENT	16 kA	16 - 20 - 25 kA
PEAK WITHSTAND CURRENT	40 kA	40 - 50 - 63 kA
SHORT CIRCUIT DURATION	1 sec.	1 sec.
GAS SEAL TYPE	Sealed pressure	Sealed pressure
CLASS	E0, M0	E0, M0



- HIGH SECURITY

- LONG OPERATION LIFE

- SEALED PRESSURE SYSTEM

- 3 POLES AND 3 POSITIONS

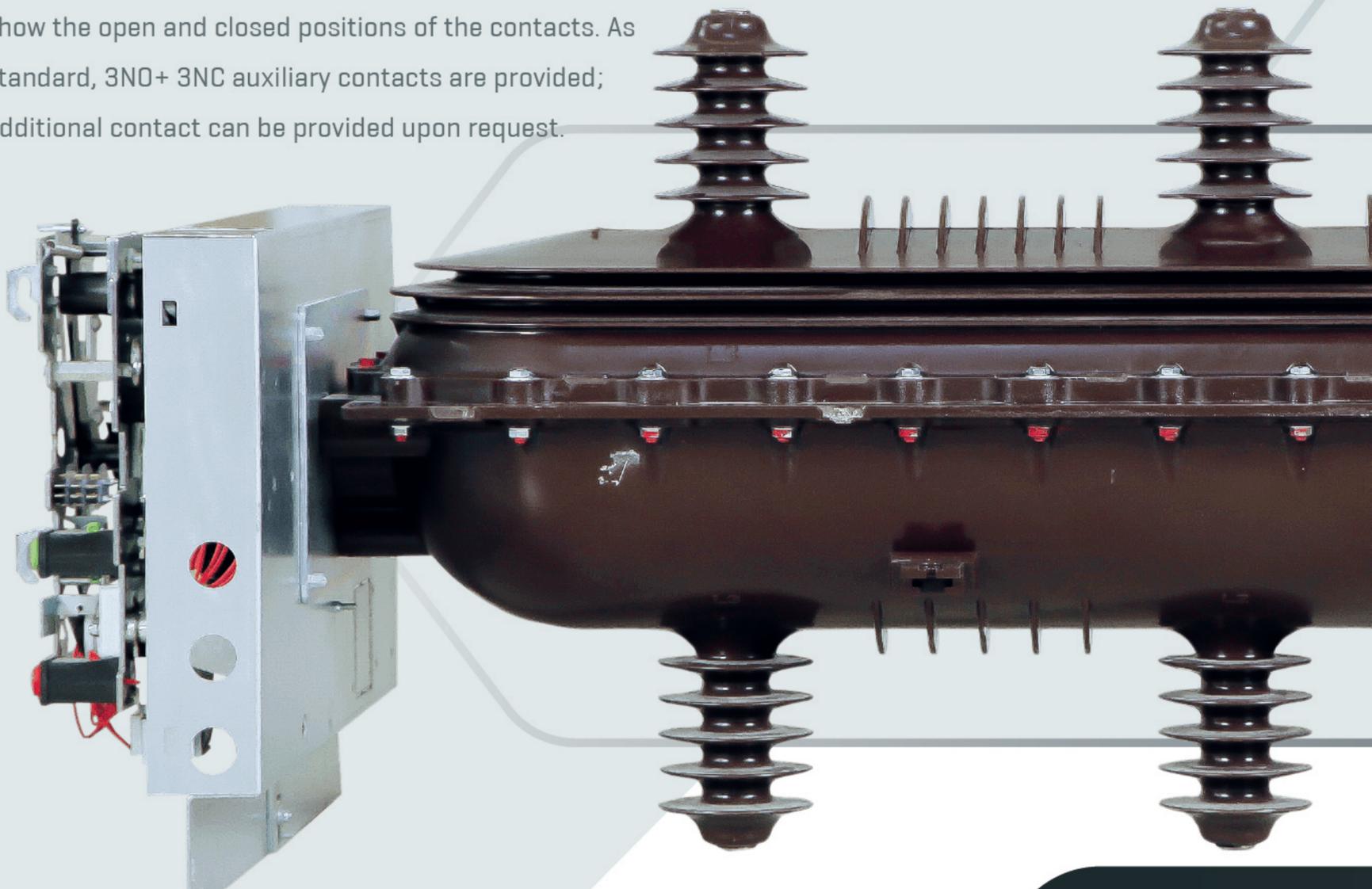
- ECONOMIC WORKING

# SF6 GAS LOAD BREAK SWITCH

SF6 Gas Discharge Disconnectors are enclosed in an epoxy resin cast body, with a "sealed pressure system"; It has 3 poles and 3 positions. EFG brand SF6 gas disconnectors, which are offered to the consumer company by filling SF6 gas at 1.4-1.8 bar pressure during the production phase and checking the gas tightness at the production site, are designed in a sealed pressure structure that does not require SF6 gas supplementation for 30 years, in accordance with TS EN 62271 - 103 standard.

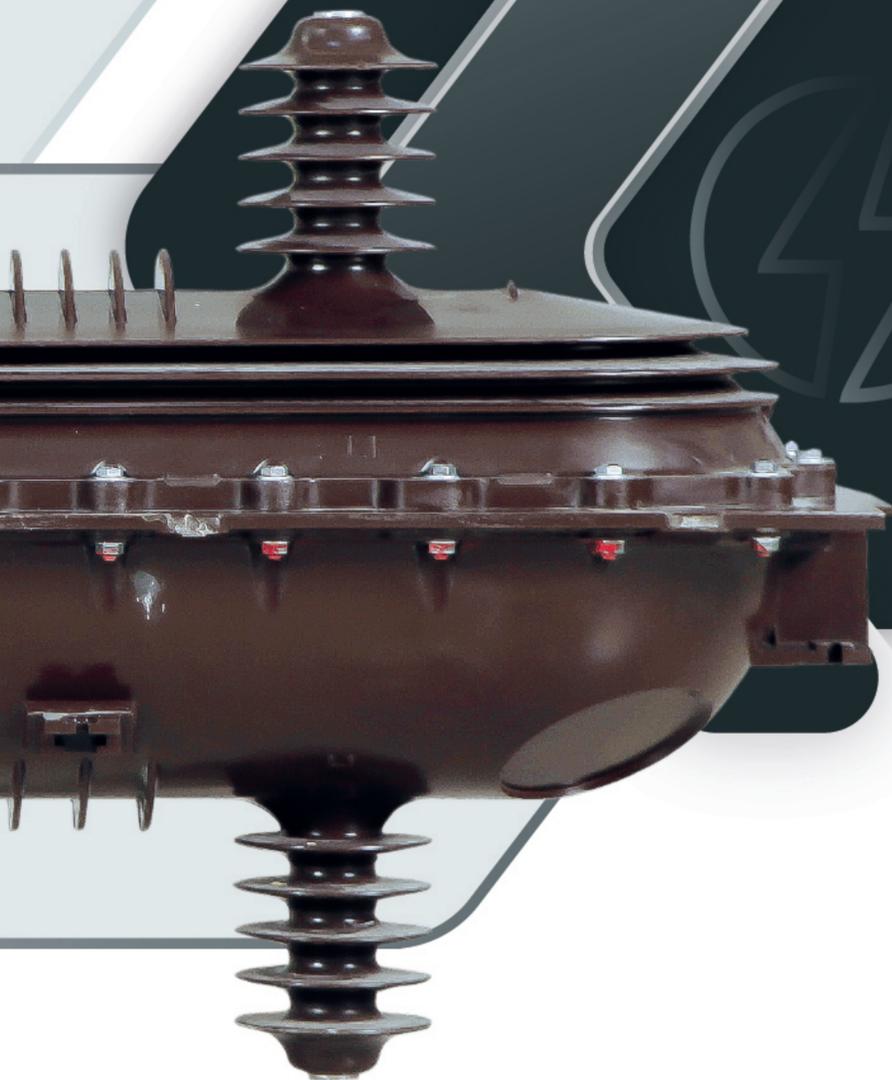
In the event that the SF6 gas pressure unexpectedly rises to a dangerous level during operation, a pressure relief valve [weakened area] is located on the rear cover of the separator body to ensure that the gas is discharged in a way that does not pose a hazard to the operating personnel.

Closing and opening operations are performed manually in the EFG brand Gas Load Switch mechanism. The closing and opening process of the earthing switch is completed depending on the operator's action. The operating mechanism is supervised by position indicators that reliably show the open and closed positions of the contacts. As standard, 3NO+ 3NC auxiliary contacts are provided; Additional contact can be provided upon request.





TYPE	ACBS36	ACBS24
RATED VOLTAGE	36 kV	24 kV
ISOLATION VOLTAGE	70 kV [factor-1 min]	50 kV [factor-1 min]
LIGHTNING IMPULSE WITHSTAND VOLTAGE	170 kV [peak -1.2-50 $\mu$ s]	125 kV[peak -1.2-50 $\mu$ s]
RATED CURRENT	630 A	630 A
RATED FREQUENCY	50 Hz	50 Hz
SHORT CIRCUIT CURRENT	16 - 20 kA	16 - 20 kA
PEAK WITHSTAND CURRENT	40 kA	40 kA
SHORT CIRCUIT DURATION	1 sec.	1 sec.
GAS SEAL TYPE	Sealed pressure	Sealed pressure
CLASS	E3, M1	E3, M1



- HIGH SECURITY

- LONG OPERATION LIFE

- SEALED PRESSURE SYSTEM

- 3 POLES AND 3 POSITIONS

- ECONOMIC WORKING

ENERJİYE  
**YON VERİR**

# ABK SERIES



CONCRETE DISTRIBUTION AND  
TRANSFORMER CENTERS





EFG brand MV/LV Concrete Distribution and Transformer Substations are designed in accordance with TS EN 62271-202 [IEC 62271-202] standard and TEDAŞ MYD related specification, with concrete enclosure, monoblock, compact type features for use in system voltages up to 36 kV. All type tests required by the standard have been completed in accredited laboratories in Turkey and abroad.

Concrete Distribution and Transformer Centers consist of three sections; HV switching units section, MV distribution transformer section, LV distribution panel section. Each section has its own independent access doors and ventilation shutters. Different door and ventilation louver configurations can be made according to the need.





DUE TO MONOBLOCK STRUCTURE,  
QUICK AND EASY INSTALLATION  
SUITABLE FOR MOVEMENT



SUITABLE FOR THE ENVIRONMENT BY  
IMAGE AND STRUCTURE, DIFFERENT  
COLOR OPTIONS ON DEMAND



RESISTANT AGAINST CLIMATE  
CONDITIONS AND HAS A LONG  
LASTING STRONG STRUCTURE

## USAGE AREAS

-  Transformer Centers
-  Distribution Centers
-  Industrial Centers
-  Wind, Power Plants
-  Solar Power Plants
-  Compensation Facilities
-  Water Pump Stations
-  Generator Cabinets



# DESIGN AND STRUCTURAL FEATURES

The concrete enclosure of the compact center is produced as a monoblock with the tank/foundation section and side walls, excluding the roof, and the roof is produced separately. The roof, side walls and tank/foundation section of the compact center and its enclosure are completely waterproof. The tank/foundation section is suitable for the smallest bend radius of 36 kV 1x240 mm cable.

## TYPES

- ABK-A**: Compact Transformer Substations with Air Insulated Switchgears [1000 kVA]
- ABK-B**: Compact Transformer Substations with Air Insulated Switchgears [1600 kVA]
- ABK-H**: Distribution Centers with Air Insulated Switchgears
- ABK-C**: LV Panelless Compact Transformer Substations with Air Insulated Switchgears [1000 kVA]
- ABK-D**: LV Panelless Compact Transformer Substations with Air Insulated Cells [1600 kVA]
- ABK-T**: Centers with LV Panel and Distribution Transformer
- ABK-R**: Compact Substations with RMU



## HOUSING AND PARTITIONS

-  The roof of the compact center is resistant to a load of 2500 N/m<sup>2</sup>.
-  The enclosure is resistant to a wind pressure of at least 34 m/s.
-  Ventilation louvers and doors are resistant to a mechanical shock [IK10] of 20 Joules from the inside and outside.
-  Enclosure Class: 10
-  Concrete transformer centers are safe against earthquake conditions proven.
-  Between the HV Switchgear Section and the Transformer Section and between the Transformer Section and the LV Panel Section are separated by concrete walls.

## CONCRETE AND STEELREBAR PROPERTIES

-  C35/45 concrete conforming to TS EN 206-1 standard is used.
-  Steel reinforcements in accordance with TS 708 are used.
-  Quality tests on concrete are carried out in accredited laboratories.

## VENTILATION LOUVER DOORS AND LOCKING SYSTEMS

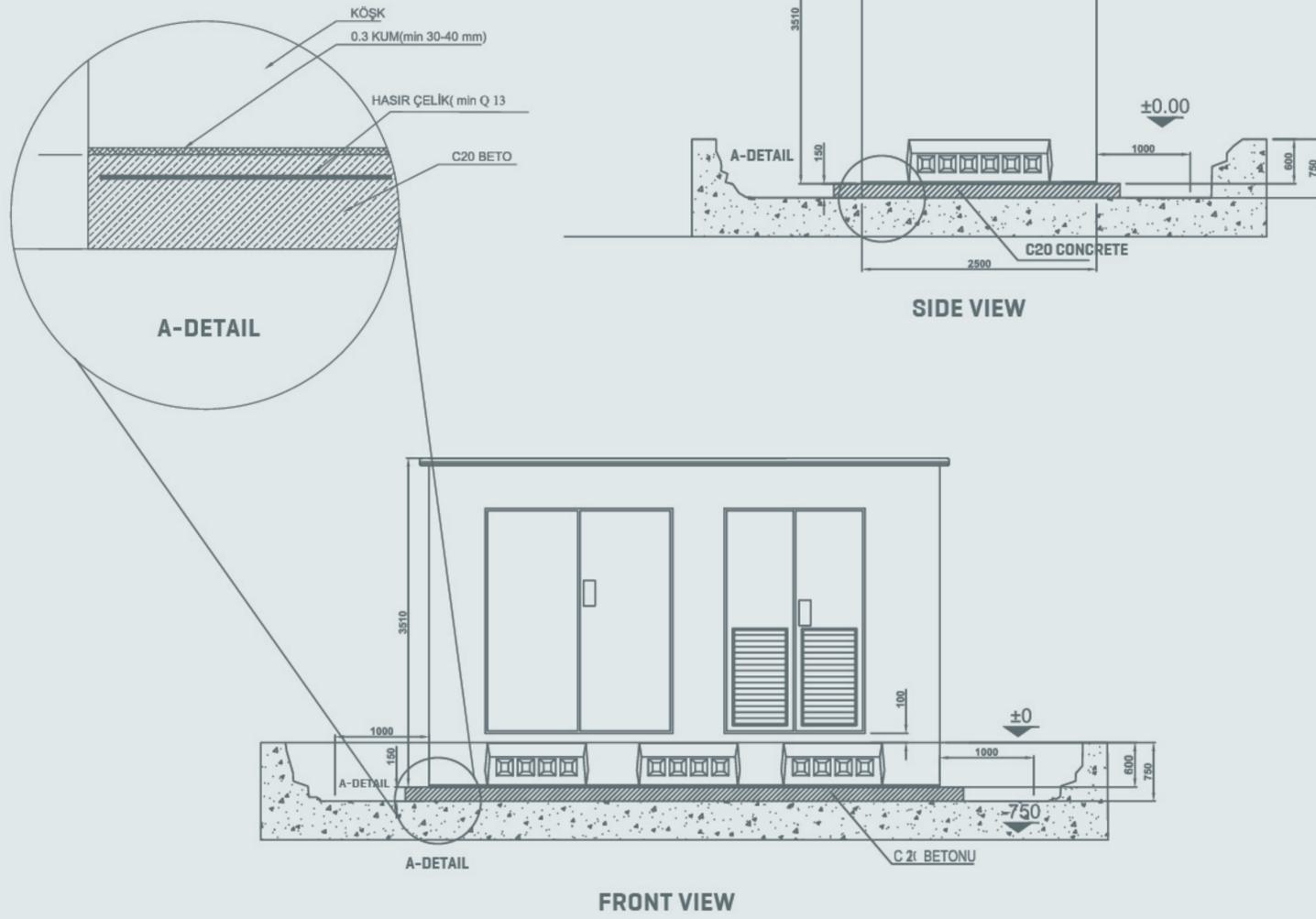
-  Ventilation shutters and doors with a thickness of 2 mm are produced from galvanized sheet material and are coated with electrostatic powder paint.
-  The doors are designed to remain in the 120° open position and cannot be removed from the outside.



# TECHNICAL SPECIFICATIONS

RATED VOLTAGE [kV]	36 kV
MAXIMUM RATED POWER [kVA]	1000 - 1600 kVA
INTERNAL ARC WITHSTANDING	[AB] 16 kA-1 sec. 10
PROTECTION CLASSIFICATION	IP 23D
APPLIED STANDARD	TS/IEC EN 62271-202

## BASIC CONCRETE PREPARATION AND INSTALLATION

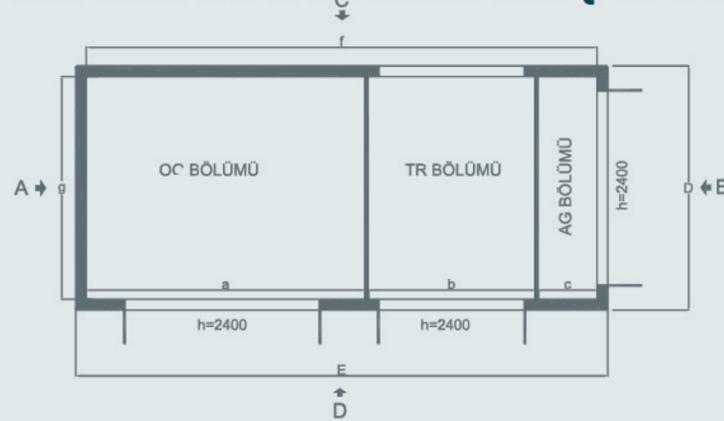


- ⚡ Soil excavation is done by paying attention to the subbasement level.
- ⚡ Grounding network is made. The ground is leveled. Approximately 150 mm thick C20 quality iron-reinforced concrete is poured on the ground.
- ⚡ An intermediate surface is created by covering the concrete surface with 0.3 mm sand of approximately 2-3 cm thickness.
- ⚡ Concrete kiosk is placed on the ground prepared in accordance with the instructions on the kiosk.
- ⚡ LV and MV external cable connections are made. Cable entry/exit holes are sealed watertight.
- ⚡ Grounding network connection is made with the Equipotential Grounding Busbar in the kiosk.
- ⚡ The landscaping of the compact center is done.

# TYPES AND DIMENSIONS

## ABK-A

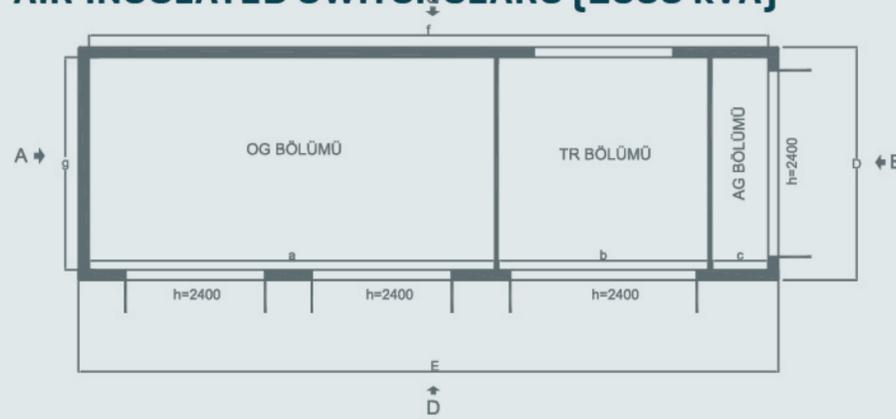
### COMPACT TRANSFORMER SUBSTATIONS WITH AIR INSULATED SWITCHGEARS (1000 kVA)



TYPE (MV+TRF+L)	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-A 4350	1000 kVA	1750	1700	600	2500	4350	4130	2280
ABK-A 5450	1000 kVA	2850	1700	600	2500	5450	5230	2280
ABK-A 6000	1000 kVA	3400	1700	600	2500	6000	5780	2280
ABK-A 6490	1000 kVA	3890	1700	600	2500	6490	6270	2280
ABK-A 7500	1000 kVA	4900	1700	600	2500	7500	7280	2280

## ABK-B

### COMPACT TRANSFORMER SUBSTATIONS WITH AIR INSULATED SWITCHGEARS (1600 kVA)



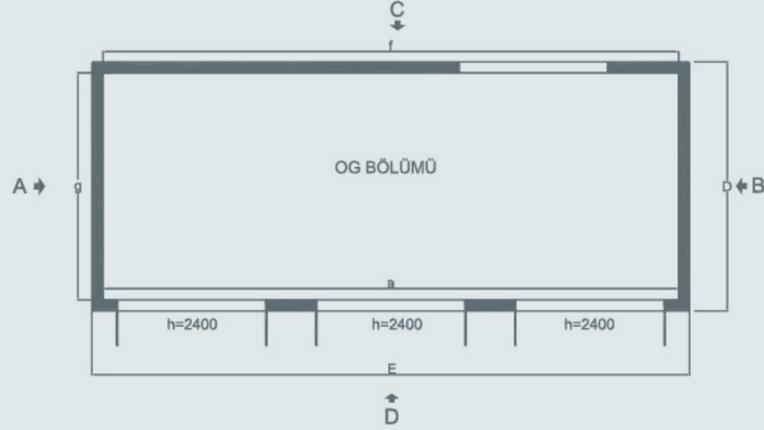
TİP (OG+TR+AG)	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-B 5450	1600 kVA	2300	2250	600	2500	5450	5230	2280
ABK-B 6000	1600 kVA	2850	2250	600	2500	6000	5780	2280
ABK-B 6490	1600 kVA	3340	2250	600	2500	6490	6270	2280
ABK-B 7500	1600 kVA	3890	2250	600	2500	7500	7280	2280

\*Lowercase letters inside and uppercase letters indicate outside-to-out dimensioning.

\*All dimensions shown in mm.

## ABK-H

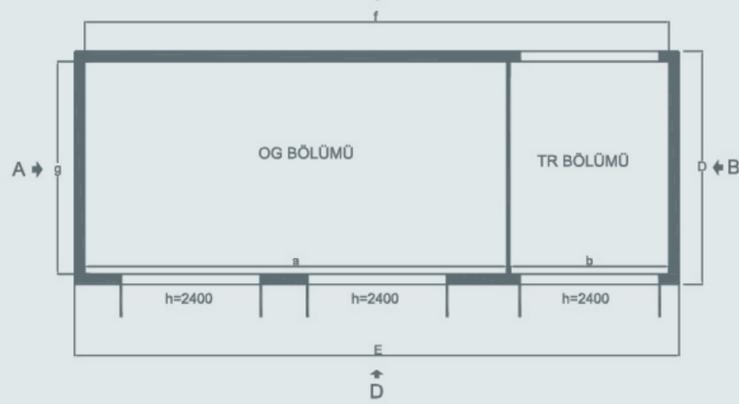
### DISTRIBUTION CENTERS WITH AIR INSULATED SWITCHGEARS



TYPE [MV]	TRF POWER	a	b	c	D	E	f	g
ABK-H 3800	-	3580	-	-	2500	3800	3580	2280
ABK-H 4350	-	4130	-	-	2500	4350	4130	2280
ABK-H 5450	-	5230	-	-	2500	5450	5230	2280
ABK-H 6000	-	5780	-	-	2500	6000	5780	2280
ABK-H 6490	-	6270	-	-	2500	6490	6270	2280
ABK-H 7500	-	7280	-	-	2500	7500	7280	2280

## ABC-C

### LV PANELS COMPACT TRANSFORMER SUBSTATIONS WITH AIR INSULATED SWITCHGEARS [1000 kVA]



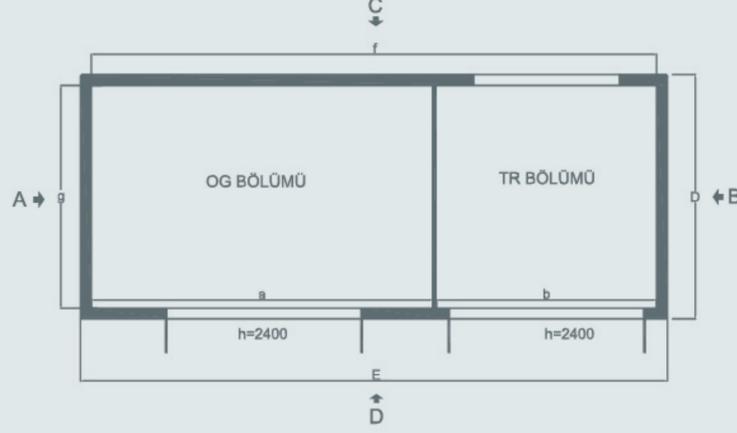
TİP [OG+TR]	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-C 5450	1000 kVA	3490	1700	-	2500	5450	5230	2280
ABK-C 6000	1000 kVA	4040	1700	-	2500	6000	5780	2280
ABK-C 6490	1000 kVA	4530	1700	-	2500	6490	6270	2280
ABK-C 7500	1000 kVA	5540	1700	-	2500	7500	7280	2280

\*Lowercase letters inside and uppercase letters indicate outside-to-out dimensioning.

\*All dimensions shown in mm.

## ABK-D

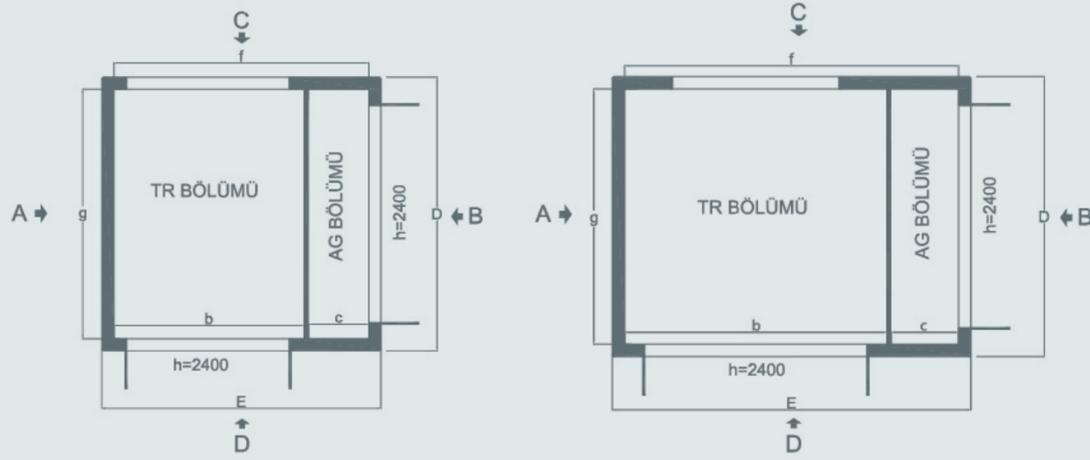
### LV PANELLESS COMPACT TRANSFORMER SUBSTATIONS WITH AIR INSULATED CELLS [1600 kVA]



TİP [OG+TR]	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-D 5450	1600 kVA	2940	2250	-	2500	5450	5230	2280
ABK-D 6000	1600 kVA	3490	2250	-	2500	6000	5780	2280
ABK-D 6490	1600 kVA	3980	2250	-	2500	6490	6270	2280
ABK-D 7500	1600 kVA	4990	2250	-	2500	7500	7280	2280

## ABK-T

### CENTERS WITH LV PANEL AND DISTRIBUTION TRANSFORMER



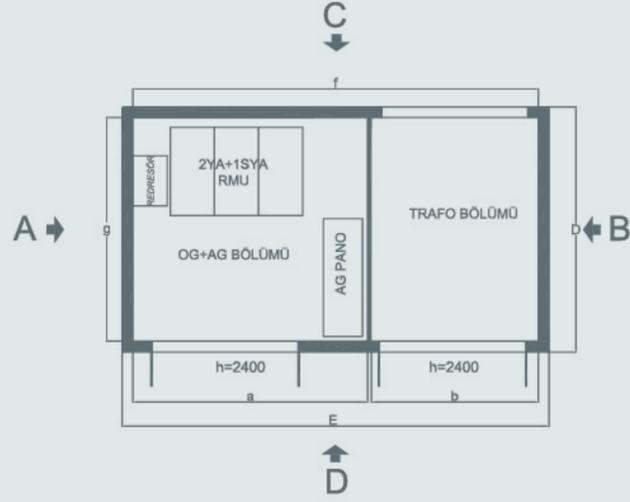
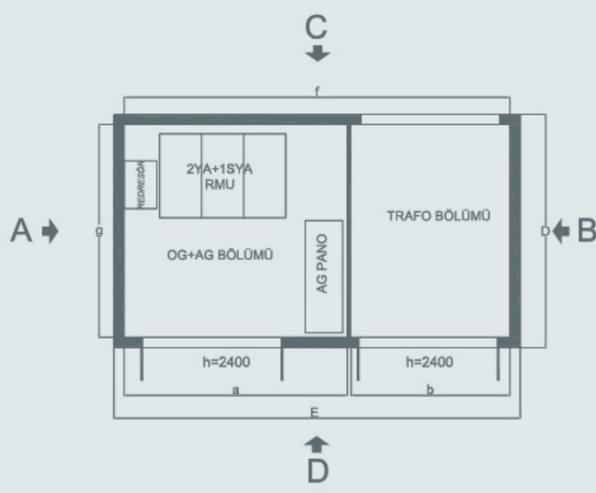
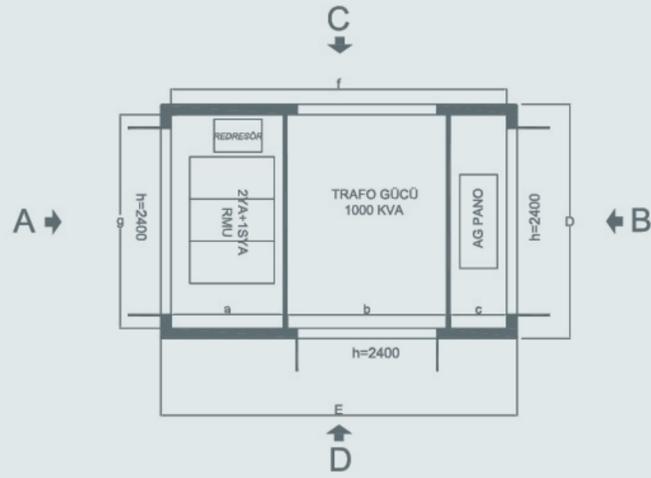
TİP [TR+AG]	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-T 2550	1000 kVA	-	1740	550	2500	2550	2330	2280
ABK-T 3200	1000/1600 kVA	-	2340	600	2500	3200	2980	2280

\*Küçük harfler içten içe büyük harfler dıştan dışa ölçülendirmeyi göstermektedir.

\*Tüm ölçüler mm cinsinden gösterilmiştir.

## ABK-R

### COMPACT SUBSTATIONS WITH RMU



TİP (RMU)	TRAFO GÜCÜ	a	b	c	D	E	f	g
ABK-R 3800 (D)*	1000 kVA	1200	1700	600	2500	3800	3580	2280
ABK-R 4350 (I)**	1000 kVA	2390	1700	-	2500	4350	4130	2280
ABK-R 5450 (I)**	1000 kVA	3490	1700	-	2500	5450	5230	2280
ABK-R 4350 (D)*	1000 kVA	1200	1700	600	2500	4350	4130	2280
ABK-R 4800 (I)**	1000 kVA	2290	1700	-	2500	4800	4580	2280



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