

ECBSST-AI

NEW GENERATION 3 - IN - 1

Vacuum Circuit Breaker – Air isolator – Earthing switch
12-17,5-24KV / 630-800-1250A / 12,5-16-20-25KA



3 IN 1

Vacuum Circuit Breaker - Air isolator - Earthing Switch

12 - 17,5 - 24 kV / 630 - 800 - 1250 A / 12,5 - 16 - 20 - 25 kA

ECBSST-AI has vacuum breaking and visible isolation in air, these two features are irreplaceable qualities of this unit and they complete its points of strength. The breaking in vacuum is itself free of any type of maintenance, having the tendency to improve with increasing of load operations.

The isolation in air allows to forget all the problems related to the use of gas; the air does not present the need to be contained in a sealed tank, self-resets in case of discharge, it is ecological and does not submit all environmental problems that may incur with the use and disposal of gas.

ECBSST-AI embodies the logical evolution in the modern design of power distribution satisfying three different electrical installations requirements (breaking/interruption, isolation and earthing).

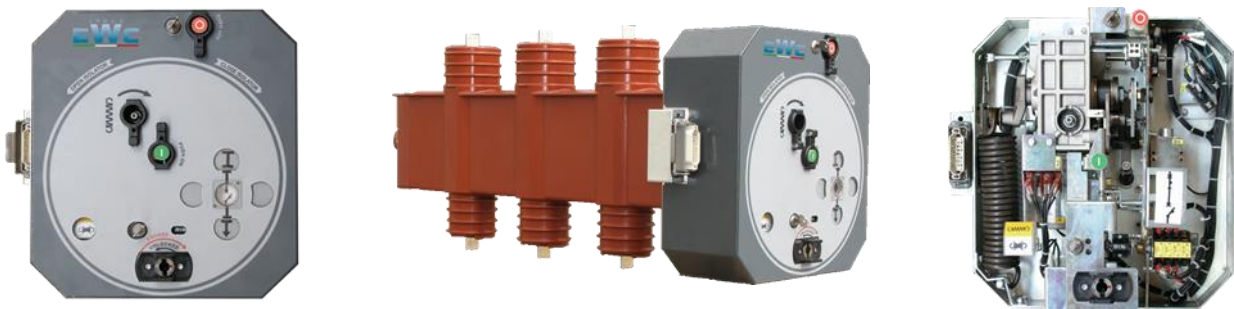
ECBSST-AI allows the execution of all those operations normally required in the exercise of secondary electrical distribution systems.

Purchasing **ECBSST-AI** you can condensate, in only 50 cm width, all the functions of circuit-breaker, air rotary line isolator and earthing switch. The particular structure of the apparatus also allows both simple assembly of the constituent elements, both the easy replacement and modification.

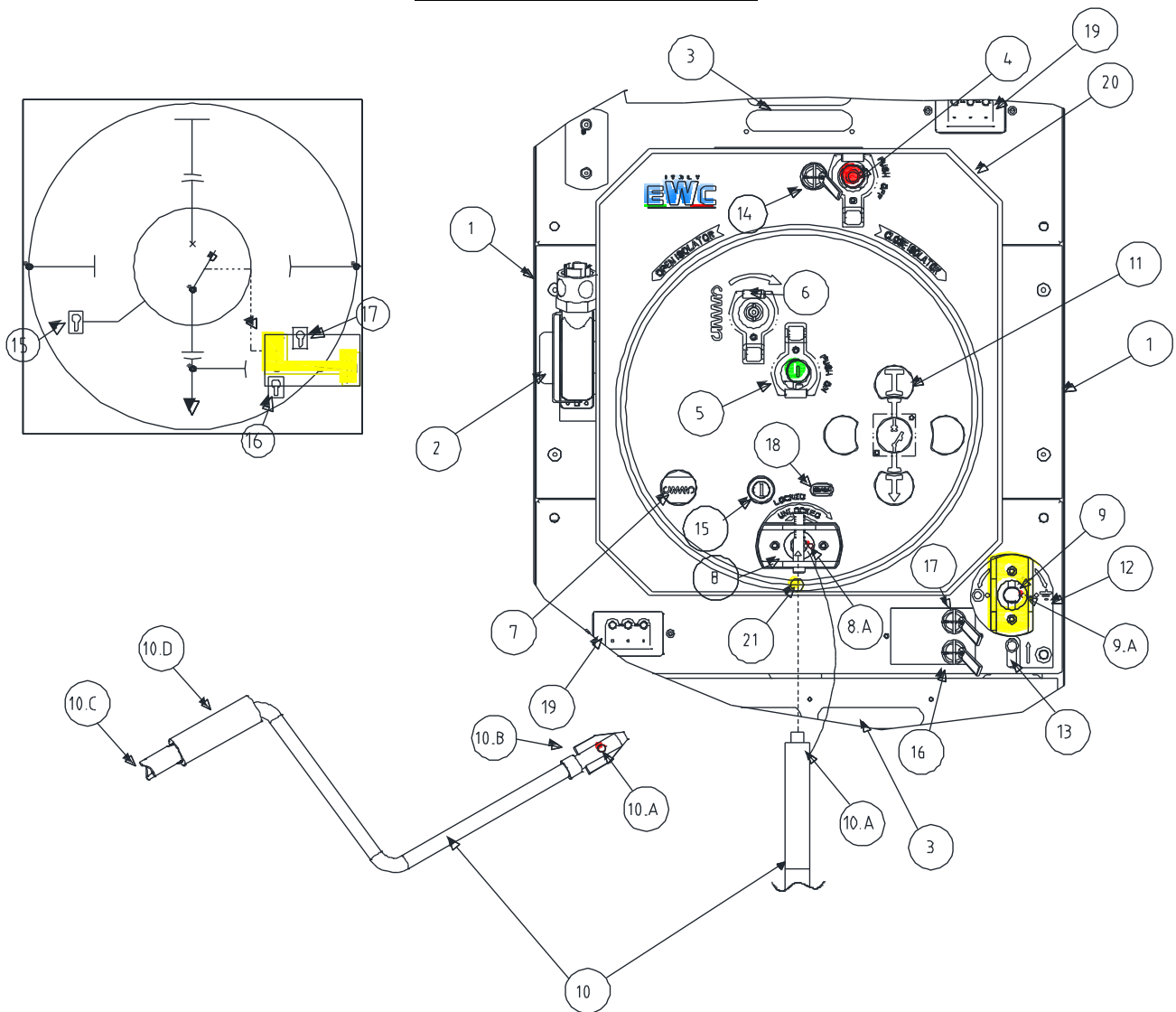
The exercise of the power network is an activity that does not allows errors, that is why all devices interested in the operations of power control and distribution should be as simple and intuitive as possible.

For this reason **ECBSST-AI** has been designed to be:

- simple maintenance thanks to the use of a fluent operating mechanism, easy to repair, to update and replace.
- Easy to use thanks to the clarity of the controls and the presence of a synoptic with detailed information and interactive, able to inform the operator about the line and the unit conditions.



Simple and Versatile



1. Side covers
2. Auxiliary circuits connector (plug + socket)
3. Inspection window
4. Circuit breaker (C.B.) opening pushbutton with padlock facility optional
5. C.B. closing pushbutton with padlock facility optional
6. Manual charging of closing spring
7. Mechanical indication closing spring charged (yellow) / discharged (white)
8. Air rotary isolator operation seat
- 8.A. "Red point" indicator
9. Earthing switch operation seat
- 9.A. "Red point" indicator
10. Air rotary isolator and earthing switch operating lever

- 10.A. "Red point" indicator
- 10.B. Side for air rotary isolator and earthing switch operations
- 10.C. Side for manual charging of closing spring
- 10.D. Retractable knob
11. Isolator and C.B. position indication
12. Earthing switch position indication
13. Unlock door
14. Key lock C.B. in open position
15. Key lock isolator in open / close position key free
16. Key lock earthing switch in earth position key free
17. Key lock earthing switch in open position
18. Counter of operations
19. 3ph voltage presence indicator
20. Recessed handles for rotation and removal (4 sides)
21. "Yellow" button for key lock air rotary isolator in open

Operator safety

The safety of personnel involved in the maintenance of electrical plant has always been a central prerogative in the company policy of EWC GROUP srl. Given this premise then, we can say that the ECBSST-AI not only limited to the application of standards, offering a long series of interlocks and additional segregations able to ensure the safety of workers also in the toughest conditions.

The air insulation allows to forget all those typical concerns of gas insulated equipment, in fact the air particular feature is to self-restore the dielectric capacity in case of discharge, has no need of maintenance and does not require sealed envelop that does not allow a reliable visibility. For reasons related not only to the safety, but also the robustness and continuity of service, EWC GROUP srl, has also limited to the minimum electrical interlocks, all safety systems are mechanical type and physically prevent the execution of incorrect operations by users.

Thanks to the unique rotating movement, ECBSST-AI allows to carry out an isolation able to offer a complete segregation between live parts and accessible parts. This special type of isolation allows to carry out safely the mechanical test of vacuum circuit-breaker and relevant mechanism even if the line is out of service and isolated.

MECHANICAL INTERLOCKS

• **Anti-pumping main contacts device**

If the vacuum circuit-breaker is tripped is not possible accidental closing of the main contacts.

• **Mechanical interlock air rotary isolator and earthing switch**

Prevents the closing of the earthing-switch if the air isolator is not “open” and the closing of the air isolator if the earthing switch is not “open”.

• **Mechanical interlock between vacuum circuit-breaker and air rotary isolator**

Opens (OFF) the vacuum circuit breaker when you insert the operating lever inside the air rotary isolator operation seat.

• **Mechanical interlock panel door**

Prevents the opening of panel door and access to the cable compartment, if the earthing switch is not “close” and prevents the opening of the earthing switch with cable compartment panel door open.

• **Mechanical block - operating handle**

During the isolation and earthing operation it is not possible to extract the operating lever before completing entirely movements required to open \ close the air isolator or the earthing switch.

• **Mechanical block – auxiliary circuit connector (Optional)**

Opens the main circuit (OFF) if the auxiliary connector plug is removed from the socket. Prevent also the closing (ON) of vacuum circuit-breaker until the plug is not fitted into the socket.

KEY LOCKS (Optional)

• **Key lock on air rotary isolator (rotation block)**

Prevents the possibility to insert the operating lever in the air rotary isolator operation seat blocking the rotation (both in open or close direction) and avoiding the accidental opening OFF (by inserting the operating lever) of the vacuum circuit breaker if ON.

• **Key lock on air rotary isolator in open isolated position**

Prevents the closing of the air rotary isolator without the presence of key.

• **Key lock air rotary isolator/earthing switch**

Prevents the closing of the earthing switch without the key released from the key lock in open position of the air rotary isolator. Prevents the closing of the air rotary isolator without the key released from the key lock in open position of the earthing-switch.

• **Key lock earthing switch - key free in open.**

Prevents the closing of the earthing without the presence of the key.

• **Key lock earthing switch - key free in closed**

Prevents the opening of the earthing without the presence of the key.

• **Key lock on the opening pushbutton**

Lock the vacuum circuit-breaker in open position (OFF).

PADLOCK FACILITIES (Optional)

Prevent operator access to the controls that allow the following functions:

Opening pushbutton, closing pushbutton, manual charging of closing spring, operations on air rotary isolator, operations of the earthing switch.

General characteristics

Circuit-breaker		ECBSST-AI-12			ECBSST-AI-17			ECBSST-AI-24		
Pole centre distance	mm	230			230			230		
Standards	IEC 62271-100 CEI 17-1									
Rated voltage	Ur [kV]	12			17.5			24		
Rated insulation voltage	Us [kV]	12			17.5			24		
Withstand voltage at 50 Hz	Ud (1') [kV]	28			38			50		
Impulse withstand voltage	Up [kV]	75			95			125		
Rated frequency	Fr [Hz]	50-60			50-60			50-60		
Rated normal current (40°C)	Ir [A]	630	800	1250	630	800	1250	630	800	1250
Rated breaking capacity	Isc [kA]	12.5	-	-	12.5	-	-	12.5	-	-
		16	16	16	16	16	16	16	16	16
		20	20	20	20	20	20	20	20	20
		25	25	25	25(*)	25(*)	25(*)	25(*)	25(*)	25(*)
Rated short-time withstand current (3s)	Ik [kA]	12.5	-	-	12.5	-	-	12.5	-	-
		16	16	16	16	16	16	16	16	16
		20	20	20	20	20	20	20	20	20
		25(*)	25(*)	25(*)	25(*)	25(*)	25(*)	25(*)	25(*)	25(*)
Making capacity	Ip [kA]	31.5	-	-	31.5	-	-	31.5	-	-
		40	40	40	40	40	40	40	40	40
		50	50	50	50	50	50	50	50	50
		63(*)	63(*)	63(*)	63(*)	63(*)	63(*)	63(*)	63(*)	63(*)
Operation sequence	O-0.3s-CO-15s-CO									
Opening time	[ms]	40 - 60			40 - 60			40 - 60		
Arcing time	[ms]	10 - 15			10 - 15			10 - 15		
Total breaking time	[ms]	50 - 75			50 - 75			50 - 75		
Closing time	[ms]	40 - 70			40 - 70			40 - 70		
Operating temperature	[°C]	-5 ÷ +40			-5 ÷ +40			-5 ÷ +40		
Tropicalization	IEC 60068-2-30 IEC 60271-2-1									
Electromagnetic compatibility	IEC 62271-1									

(*) On request

Operations Sequence “ON” Commissioning

The operations sequence described on the following pages expose the steps to made to put in function or out of function electrical line connected to the ECBSST-AI.

The operations to perform to “ON” a line by the ECBSST-AI unit are clear and simple. The internal mechanism of the operating device prevents any type of operator error, ensuring reliable feeder to each type power plant.

Focusing on putting out of function (page 9) should be emphasized that also in this case the ECBSST-AI allows to perform, safely and intuitive operations of the breaking, disconnection and earthing, necessary for the proper isolation of a line.

The set of mechanical blocks prevents each type of mistakes during these operations. The key locks shown are not strictly necessary for the proper and safe use of the device.



1- Close the panel door



2- Unlock the earthing switch by the key
(if available)



3- Open the earthing switch



4- Lock the earthing switch by the key
(if available)



5- Unlock the air rotary isolator by the key
(if available)



6- Unlock the air rotary isolator



7- Close the air rotary isolator by the rotation



8- Lock the air rotary isolator in position
“close”



9- Lock the air isolator by the key
(if available)



10- Unlock the opening push button by the key
(if available)



11- Charge the spring



12- Close (ON) the vacuum circuit breaker

Operations Sequence “OFF” Decommissioning



1- Open (OFF) the vacuum circuit-breaker



2- Lock the opening push button by the key (if available)



3- Unlock the air rotary isolator by the key (if available)



4- Unlock the air rotary isolator



5- Isolation (by the rotation)



6- Lock the air rotary isolator in “open” position



7- Lock the air rotary isolator by the key (if available)



7A- Only in case of version equipped with key lock air isolator/earthing switch push the “yellow” button and free the key to fit into the earthing switch key lock



8- Unlock the earthing switch by the key (if available)



9- Close the earthing switch



10- Lock the earthing switch by the key (if available)



11- Open the panel door

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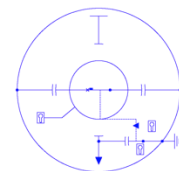
1- Charge the spring



2- Closing Test



3- Opening Test



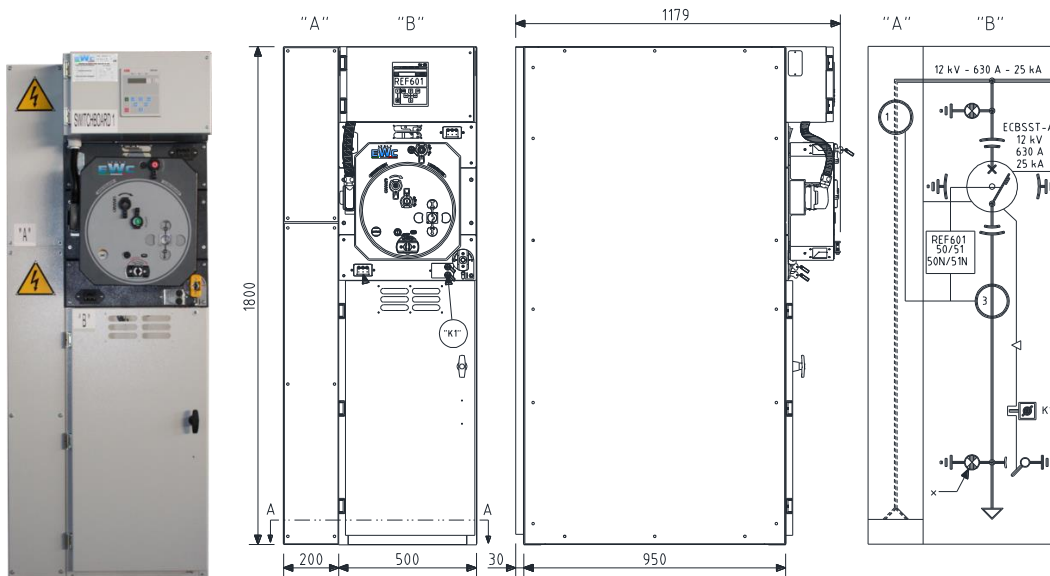
3- Test Position

The special design of the ECBSST-AI allows the TEST of the vacuum circuit-breaker with air rotary isolator open (plant isolated). This test allows the operator to verify the electromechanical properties and integrity of the vacuum circuit-breaker without powering up the system connected to it.

Switchboards

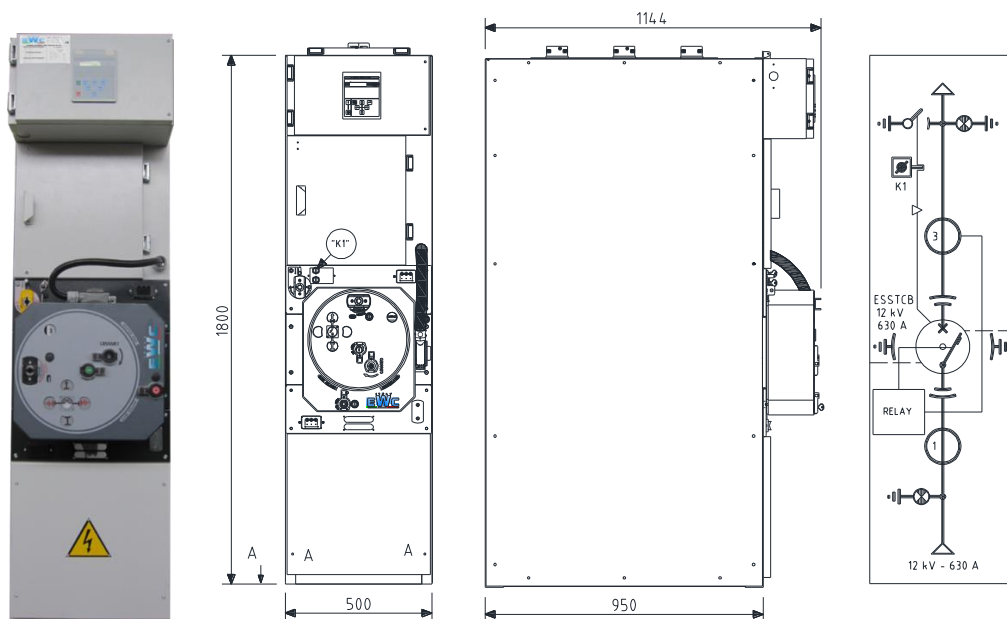
1- SWITCHBOARDS HAVING LEFT OR RIGHT INCOMING PANEL (incoming/outgoing cables from bottom) – MESG-ECBSST-00-0000-00

This switchboard is of a conventional type, allowing the cables incoming / outgoing from the bottom. The incoming cables panel AC can be installed either on the left or right side of the panel. There is also version suitable for bus-bars incoming / outgoing instead of cables.



2- OVERTURNED SWITCHBOARDS (incoming from bottom / outgoing from top) – MESG-ESSTCB-00-0000-00

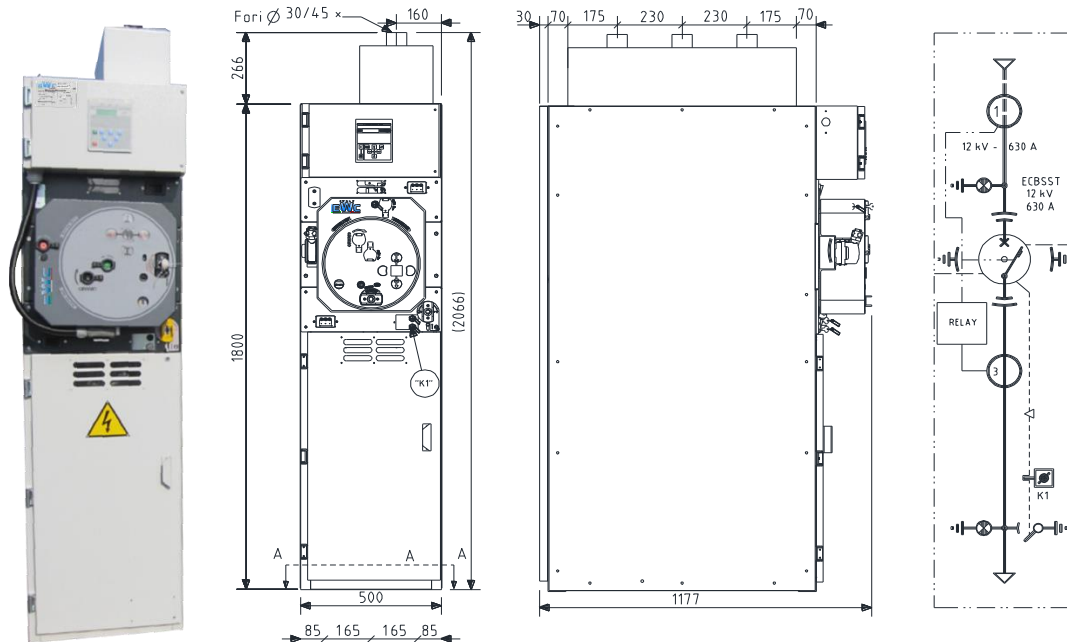
Extremely versatile, this type of switchboard allows the connection of the line without the need of side panel. The accessibility is ensured by the presence of a folding auxiliary box where is positioned the protection relay. If you need additional space into the cable compartment it is also possible overturn the cable clamps.



3- SWITCHBOARD WITH TOP INCOMING

(outgoing from bottom) – MESG-ECBSST-00-0000-00

This type of switchboard allows the arrival of the cables from the top, in the practical box installed on top of the panel where it is also possible to install the toroidal type current sensors for the detection of ground currents. This panel allows, where there is a need and opportunity, to install in 50 cm only switchboard with top incoming cables.



4- OUTDOOR VERSION

This type of switchboard is suitable for installation inside booths, kiosks, containers and prefabricated structure, or on request available in “outdoor” versions which don’t require any further protection to withstand to the weather conditions.

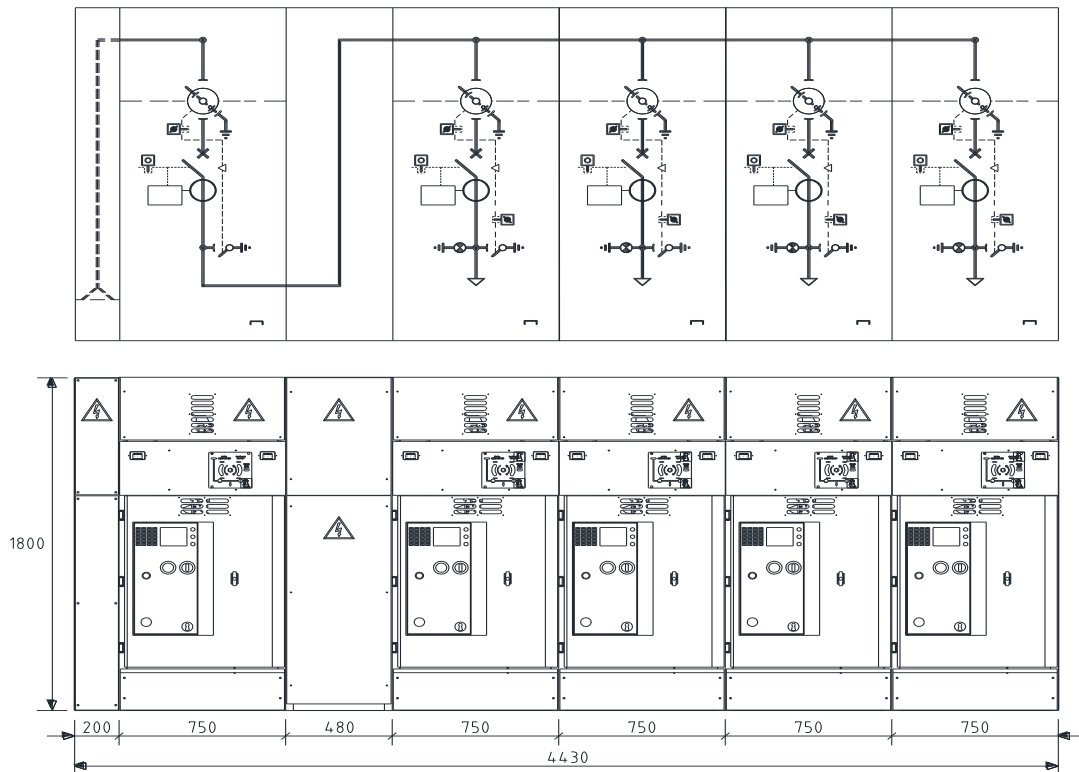


5- COMPARISON TO A TRADITIONAL SWITCHBOARD

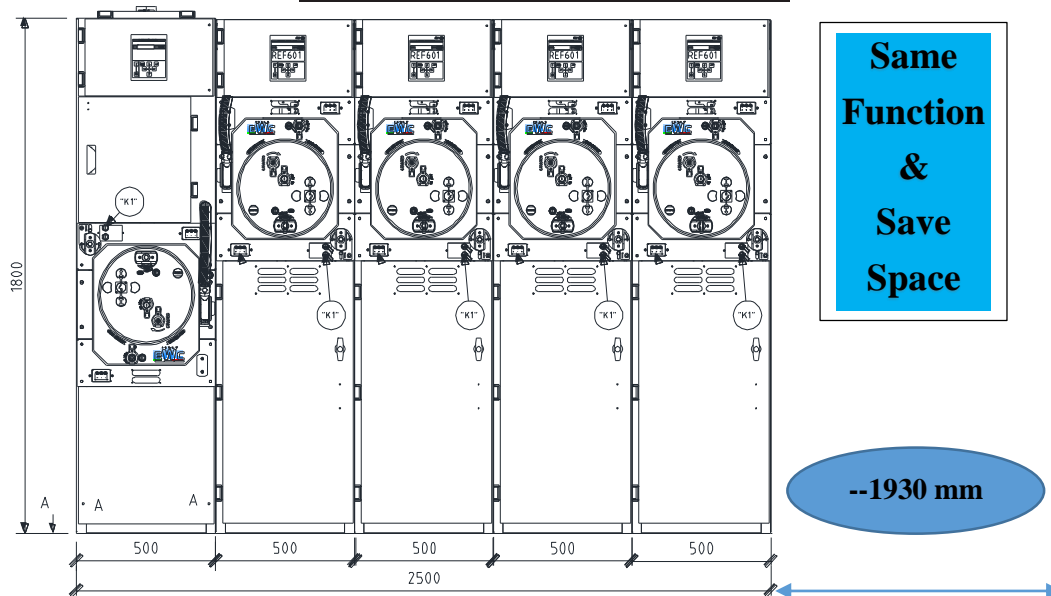
The extremely compact dimensions of “new generation” MV panels equipped with ECBSST-AI allow a remarkable space recovery.

Compared to a “traditional” switchboard of our panels equipped with off load isolator, earthing switch and separated circuit breaker, carrying out the same functions, the use of “new generation” switchboards equipped with ECBSST-AI optimizes the spaces, compacting the dimensions and reduce installation costs minimizing the environmental impact.

TRADITIONAL SWITCHGEAR

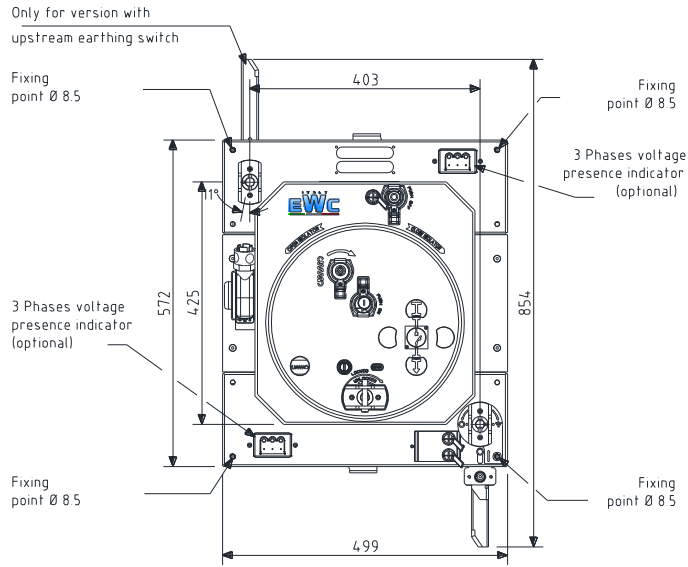


NEW GENERATION SWITCHGEAR

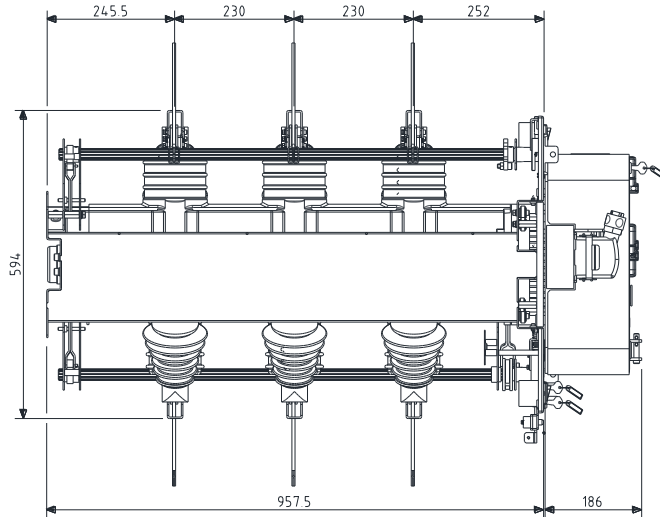


OVERALL DIMENSIONS

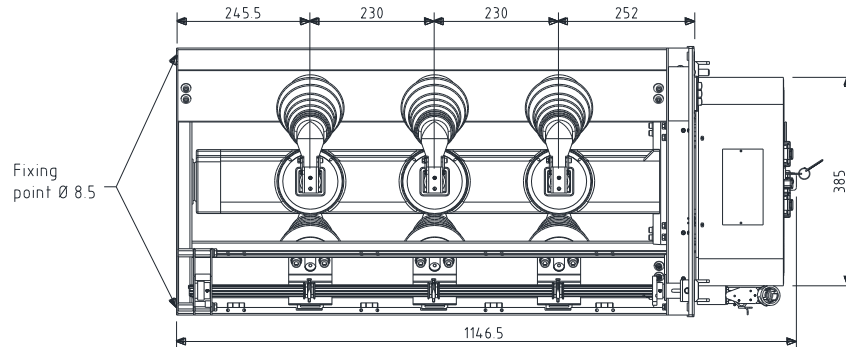
ECBSST-AI - (630/800/1250A)



ECBSST-AI - (630/800A)



ECBSST-AI - (630/800A)



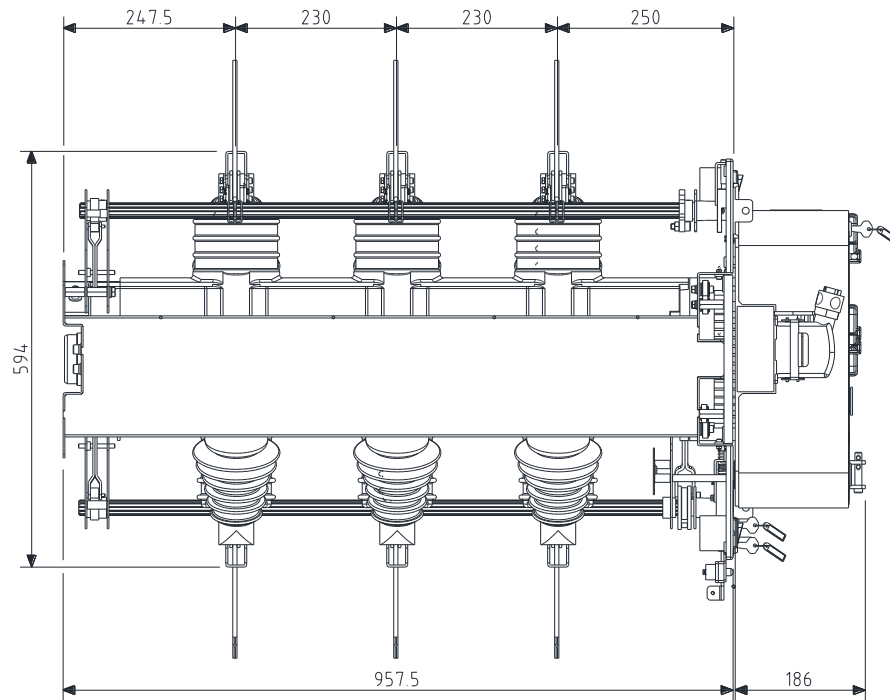
OVERALL DIMENSIONS

- **Weight** 55.0 kg (630 A) - without frame
- **Weight** 58.0 kg (1250 A) - without frame

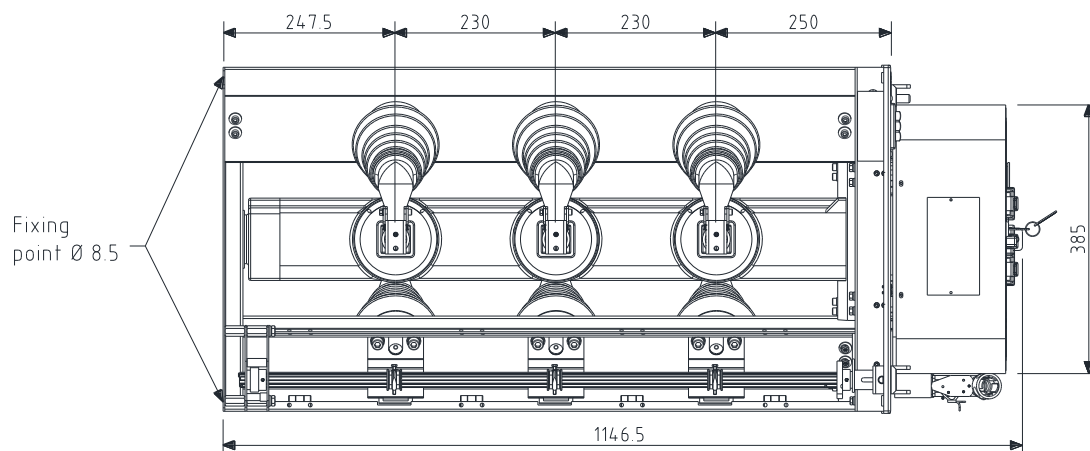
12,5-16 kA versions overall dimensions.

For the other versions the maximum dimensions are the same

ECBSST-AI - (1250A)



ECBSST-AI - (1250A)



Contact us:

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