

Medium Voltage Switchgear Primary Distribution

CPG.0

Gas insulated, single busbar cubicle range

Up to 24 kV / **2500 A** / 25 kA

Up to 36 kV / 1250 A / 25 kA

CPG System



General description

PRESENTATION

The **CPG.0** range of **Ormazabal's CPG** system is made up of a full assembly of modular cubicles of up to 24 kV / **2500 A** and up to 36 kV / 1250 A, GIS type, with SF₆ insulation, for the configuration of different primary distribution electrical diagrams.

Types of functional units:

- Circuit-breaker **CPG.0-V**
- Busbar coupling **CPG.0-C**
- Disconnecter **CPG.0-S**
- Fuse protection **CPG.0-F**
- Busbar rise **CPG.0-RB**

The installation of elements that allow to withstand an internal arc in all their Medium Voltage compartments, together with an advanced design that provides total resistance against external agents, makes the **CPG.0** cubicles the ideal solution for using in substations, both public and private, providing a safe and reliable distribution.

The final quality of the product supplied is backed by an automated manufacture process where routine tests are carried out in the different assembly stages.

Most notable features:

- High safety and reliability.
- Resistance against internal arc: IAC AFL 25 kA / 1 s
- Assembly sealed and insulated in SF₆: on-site installation and assembly, extension and replacement without gas manipulation.
- Continuity of service.
- Independent metal compartmented structure.
- Frontal access.
- Modularity and future extensibility.
- On-site installation without having to move the existing adjacent cubicles.
- No maintenance for live parts and reduced for the rest.



Operation interface

AREAS OF IMPLEMENTATION

Designed for use in a wide range of installations, both public and private. Their main applications are:

- **Utilities**
- **Industrial sector**
- **Large infrastructures**
- **Electrical power stations**



Types of cubicles

CPG.0-V

Circuit-breaker
cubicle



CPG.0-C

Busbar coupling
cubicle



CPG.0-F

Fuse protection
cubicle



CPG.0-RB

Busbar rise cubicle



CPG.0-S

Disconnecter cubicle



TECHNICAL CHARACTERISTICS				
Rated voltage	U_r	[kV]	24	36
Frequency		[Hz]	50 / 60	50 / 60
Rated current				
in busbars	I_r	[A]	Up to 2500	Up to 1250
outgoing line	I_r	[A]	Up to 2500*	Up to 1250*
Short-time power frequency withstand voltage (1 min)				
between phases and phase-to-earth	U_d	[kV]	50	70
isolating distance	U_d	[kV]	60	80
Lightning impulse withstand voltage				
between phases and phase-to-earth	U_p	[kV]	125	170
isolating distance	U_p	[kV]	145	195
Rated short-time withstand current	I_k / t_k	[kA / 1 s - 3 s]	25	25
Rated peak value withstand current	I_p	[kA]	65	65
Rated short-circuit breaking capacity	I_{sc}	[kA]	25	25
Rated short-circuit making capacity	I_{ma}	[kA]	65	65
Internal arc classification	IAC		AFL 25 kA - 1 s	AFL 25 kA - 1 s
IP rating			IP3X	IP3X

* For protection cubicle with fuses = 200 A

PHYSICAL CHARACTERISTICS

Cubicle	CPG.0-V		CPG.0-F		CPG.0-S		CPG.0-C		CPG.0-RB		
	Low	High	Low	High	Low	High	Low	High	Low	High	
Control compartment											
Width	[mm]	up to 1000	600	600	up to 2000	600					
Depth	[mm]	up to 1545	1365	1365	up to 1545	1400					
Height	[mm]	2225	2425	2225	2425	2225	2425	2225	2425	2225	2425
Weight	[kg]	up to 1200	up to 550	up to 550	up to 2400	up to 500					

APPLICABLE STANDARDS

IEC 62271-001

Common specifications for high voltage switchgear and controlgear standards.

IEC 62271-200

Alternating current metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to 52 kV.

IEC 62271-100

High voltage alternating current circuit-breakers.

IEC 62271-102

Alternating current disconnectors and earthing switches.

IEC 62271-105

High voltage alternating current switch-fuse combination.



MAIN CHARACTERISTICS

The CPG.0 cubicles present an architecture divided into independent compartments:

- (A) Switch compartment.
- (B) Busbar compartment.
- (C) Cable compartment.
- (D) Control compartment.
- (E) Operation interface

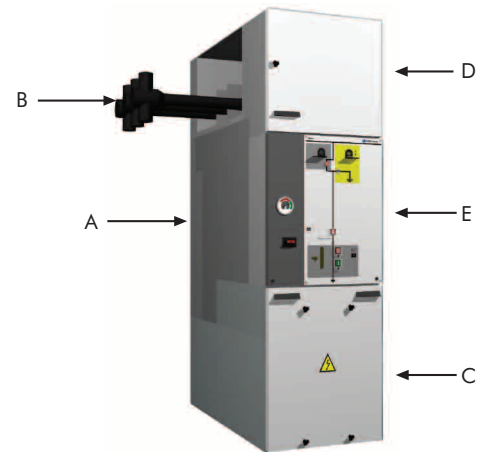
The **switch compartment**, sealed for life, houses the switching and breaking switchgear, where the insulating medium is SF₆ gas. Built in stainless steel, it is designed to withstand an internal arc of up to 25 kA / 1 s. The gas generated as a result of an internal arc is cooled down and can be channelled through a duct located in the rear side.

The **busbar compartment**, located in the upper part of the cubicle, is used to house the busbars (electrical connection between the medium voltage cubicles).

The **cable compartment**, which allows frontal access to the medium voltage cables, is located in the lower part of the cubicle and has a cover that is interlocked with the earthing circuit.

The **control compartment**, located in the upper part of the cubicle and independent of the medium voltage area, is prepared for installing metering equipment and protection relays, and contains the terminal block with the control signals properly identified.

The **operation interface** located in the central part includes, as well as the mimic diagram customised for each type of cubicle, the accesses for manual operation of: disconnector driving mechanism, circuit-breaker, spring loading, etc; and the indication elements.



Safety

Internal arc. In both its assembly and in its different compartments, the installation of different elements allows the cubicle to withstand an internal arc of 25 kA / 1 s, in compliance with the 5 criteria of Annex A of standard IEC 62271-200 (class IAC-AFL).

Environmental resistance against aggressive agents (dust, pollution, humidity, salinity, etc.), protection against indirect contact and long service life provided by its gas insulation, with the breaking and connection components housed in independent fully-sealed stainless steel tanks, sealed for life.

IP rating of IP65 for the tank and IP3X for the cubicle assembly.

Monitoring compensated by the gas pressure temperature inside the tank, including potential-free contact.

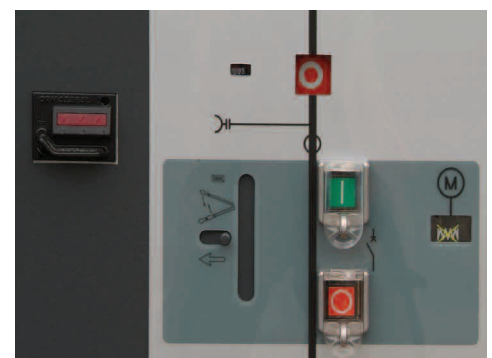
Voltage presence/absence indicator, permanent (multi-LED), and optional contacts for remote indication and/or use of electromagnetic interlocks.

Full insulation of the entire power circuit. Including the cable terminations, all of which is shielded, earthed and installed inside a metal enclosure.

Ergonomic design. Safe access to the control and indication area, located outside the switch compartment.

Standard internal interlocks. They prevent the execution of incorrect operations. Option of additional interlocks.

Safe and simple operation.



QUALITY OF THE ELECTRICAL SUPPLY

The CPG system contributes to improving the electrical distribution in Medium Voltage networks:

- **Routine tests** performed at the factory on all equipment.
- **Sealed assembly:** on-site installation and assembly, without gas manipulation.
- **Circuit-breaker** with vacuum switching technology, compact and highly reliable, certified according to standard IEC 62271-100, including extended electrical endurance (class E2) with fast reclosing cycle, and therefore maintenance-free during its entire service life.
- **Visual indication** of the position of the switchgear in the mimic diagram.
- **No maintenance** of the live parts of the cubicles, which increases the availability and continuity of service.
- **Easy and reliable connection** of the control and indication circuits, using connectors.
- **Loss of service continuity category** according to IEC 62271-200: **LSC2B**.
- **Ormazabal's** protection, metering and control **electronic units:** **ekorRPS** and **ekorRPG**.



ORMAZABAL

Focus on Medium Voltage

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Products, applications, solutions:

- Primary distribution switchgear
- Secondary distribution switchgear
- Automation, protection, remote control and communications in electrical networks
- Distribution transformers
- Low Voltage boards
- Transformer substations
- Medium Voltage applications for renewable energy

