

DNF7

Air Insulated Switchgear 36-40.5 kV



CUSTOMER BENEFITS

- Total safety for operators including full internal arc tested
- Reduced width (1,200 mm) to save civil work costs
- Immune to environmental influences
- Ideal to convey high current load



Wherever 36 or 40.5 kV power must be distributed and used with maximum availability and reliability, Schneider Electric has the time-proven equipment that best meets your needs.

If you are looking for a convenient product with proven technology based on decades of experience designing and manufacturing substation switchgear, we have the answer in our DNF7 new generation for 36-40.5 kV substations. This innovative indoor air-insulated switchgear, with ratings up to 31.5 kA, is the first in its class catering to the needs of all process industries, distribution networks and any other application in electrical networks.

The Fully Metal Clad Switchgear Robust For All Applications Based on its four distinct compartment design (circuit breaker, cables, busbar and low voltage equipment) and the use of earthed automatic shutters, DNF7 is highly reliable switchgear. The cubicle is of the true metal clad category. It meets the highest level of service continuity (LSC2B). Both busbar and cable compartments service continuity are ensured when normal maintenance is carried out in the circuit breaker compartment. As safety is a key point in this design, a provision for comprehensive shutter padlocking ensures total operator safety during maintenance work.

DNF7 is equipped with either SF6 circuit breaker type FP, or vacuum circuit breaker type HVX incorporating Schneider Electric's latest vacuum interrupters. The embedded poles and the already proven HVX mechanism, with spiral spring design, makes the vacuum circuit breaker extremely resistant for all types of applications.

Quality Standards

DNF7 has been designed and fully tested according to the latest IEC standards (IEC 62271-200/-100 and IEC 62271-1) as well as GB standard (GB 3906, GB/T11022 and DL/T 404).

All type tests have been performed in international recognized independent laboratories.

DNF7 is manufactured in our ISO 9001-2000 and ISO 4001 certified factories.

Operator Safety First

Schneider Electric's DNF7 cubicle has been designed with operator safety as the number one priority.

Internal ARC Classification (IAC)

DNF7 has been successfully tested in an international recognized laboratory according to IEC 62271-200 standards with the following classification :
IAC AFLR 31.5 kA / 1s in all compartments.

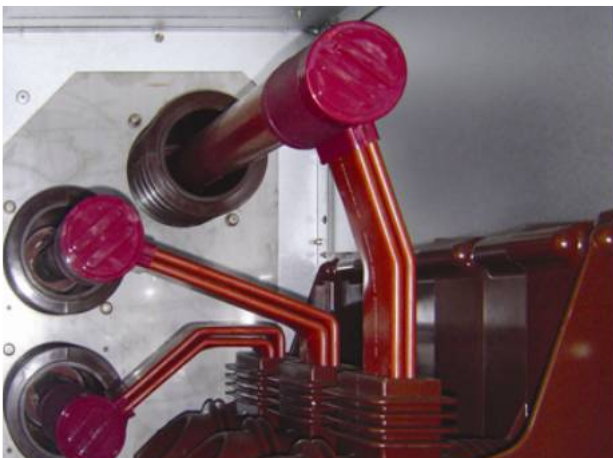
All Operations With Doors Closed

A unique design for operator safety, the front hinged door can be locked at multiple points. This interlock capability enables all operations on the slide out breaker to be performed with the breaker compartment door closed.

Ingress Protection

The enclosure of DNF7 is designed with an ingress protection degree of IP4X.
In addition the busbars are fully insulated and intercubicle segregation is provided with metallic plates and bushings.

DNF7 insulated busbar and segregation



DNF7 before internal arc test at STL laboratory

Clear, Visible Switching Devices

The mechanism cover shows a visual display of circuit breaker ON/OFF condition, spring charged/ discharged and earthing switch ON/OFF.

DNF7 has inspection windows for both breakers and cable compartments. This allows the positions of the withdrawable unit, earthing switch and the situation of the cable connection to be easily observed.

Complete Set Of Interlocks

All necessary positive interlocks are installed according to IEC standards and are designed to prevent:

- A closed circuit breaker being inserted into or withdrawn from the service position
- A circuit breaker being closed unless in the service or test position
- Insertion of the circuit breaker into service position or withdrawal from service position, if the door of the circuit breaker compartment is open.
- Closing of the earthing switch if the circuit breaker is in the service position
- Disengagement of secondary plug from socket when the circuit breaker is in service position

Necessary interlocks are also provided at the rear cable cover, which can only be opened when the breaker is tripped and brought to test position with the earthing switch closed.

Highly Reliable Components

Vacuum or SF6 switching, it's up to you.

DNF7 can be fitted either with our vacuum circuit breaker HVX or our standard range of SF6 FP circuit breaker.

SF6 Circuit Breakers

DNF7 uses Schneider Electric proven range of SF6 circuit breaker with thermopuffing technology, installed in thousands of MV switchgear worldwide.

Embedded Vacuum Interrupter

A new concept of encapsulation using solid insulation, makes vacuum interrupters insensitive to any adverse environmental conditions. Creepage distance exceeds 20 kV per mm and partial discharge is less than 5 pc, in accordance with the latest IEC standards.

Interrupters – for a long-life cycle circuit breaker

The specially designed Schneider Electric VG series of interrupters - housed in special epoxy cast poles – work on the principle of axial magnetic fields. Based on the level of fault current, these interrupters are suitable for 100 full short circuit operations.

Reliable Spring Mechanism

The traditional spiral spring mechanism design used in all the HVX family has been incorporated and perfected for fast O-CO operation. Usage of specially designed CAM profile minimizes operating energy, while providing the necessary speed for operation under fault conditions. Mechanism stress is therefore very low and ensures 10,000 mechanical operations (M2 class).

Earthing Switch

The DNF7 cubicle has been designed so that all parts are at earth potential. A high speed earthing switch with short circuit capability is employed and interlocked with the circuit breaker. The rails for the withdrawable circuit breaker are fixed to the dual bend reinforced main structure with robust screws. This ensures the reliability of the movable current path connections are trustworthy.

Trolley

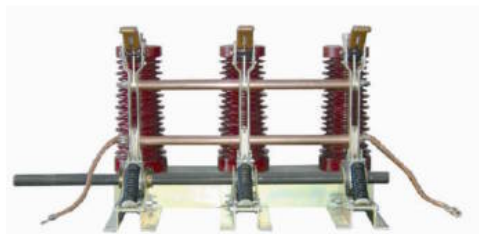
DNF7 is designed for cassette type withdrawable circuit breakers, which is the current state of the art for MV panels, but unique at this level of voltage. The circuit breaker can be removed from DNF7 switchgear by a robust and easy handled adjustable trolley. The circuit breaker can then be lowered easily to the floor using the trolley. An optional floor rolling trolley version is also available on request.



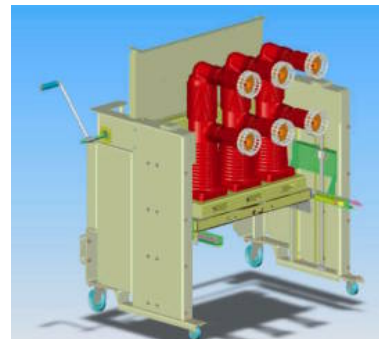
DNF7 before internal arc test at STL laboratory



DNF7 SF6 Circuit breaker type FP



DNF7 making capable earthing switch



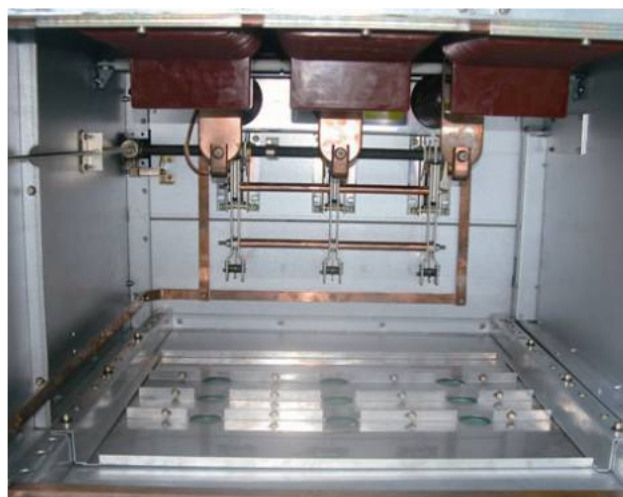
Totally adjustable service trolley

Space Saving Design

DNF7 is characterized by reduced width, which offers space and civil costs savings. Even with its reduced size of 1,200 mm, it offers spacious compartments enhanced by its withdrawable design and allows easy access for installation and maintenance work.

The DNF7 busbar is extendable on both sides, should your future power needs increase and require further upgrading. With DNF7, there is no need to replace the existing switchboard, thus avoiding costly investment.

The cassette type design allows space savings inside the switchgear. It eliminates incorrect coupling between the circuit breaker and the switchgear panel that could be caused by incorrect installation or operation.



DNF7 cable compartment

Technical Characteristics

Rated voltage	kV	33/36/40.5
Rated frequency	Hz	50/60
Rated insulation level		
• Rated power frequency withstand voltage/1 min.	kVrms	95
• Lightning impulse withstand voltage (peak value)	kVp	185
Rated current of busbar	A	1,250/1,600/2,000/2,500/3,150*
Rated current of T-off bar	A	630/1,250/1,600/2,000/2,500**/3,150*
Rated short time withstand current (4s)	kA	25/31.5
Internal Arc Classification A FLR	kA	31.5 / 1s
Rated peak withstand current (peak value)	kA	63/82
Ingress Protection Degree	kA	Enclosure IP4X, Compartment IP2X
Overall dimensions (w x h x d)	kA	1,200 x 2,400 x 2,500

* With forced cooling (on request)

** 2500 A with vacuum CB, 2000 A with SF6 CB

